

An overview of Completed Research Projects in Jamia Millia Islamia



January, 2015

Jamia Millia Islamia
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<http://jmi.ac.in>

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January, 2015

**by
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Completed Projects in Jamia Millia Islamia, June, 2014

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Faculty of Social Science
Department of Political Science

1. **Name of the Department:** Department of Political Science
2. **Project Title:** Emerging International and National Framework for the Protection of Minority Rights: Domestic Application of International Norms in India
3. **Project Investigator:** Dr. K. Savitri, Associate Professor, Political Science



4. **Co- Investigator:** None
5. **Funding Agency:** UGC
6. **Amount funded:** Salary Protection and contingency grant of Rs One lakh per ann. (INR)
7. **Duration of the project:** Two years
8. **Starting date of the Project:** February 24, 2012
9. **Project objectives:**

This research aims to seek greater understanding of the circumstances and the substance of the regime of protection of minorities at the international level, including the institutional innovations it has made to give effect to those provisions and to see what lessons can be drawn for India both in terms of policy choices and institutional structures. The research questions raised pertain to ascertaining the social, historical and other circumstances leading to the present regime of minority rights protection in India, the challenges faced by the minorities in the contemporary world, and the problem of managing diversities – ethnic, religious, cultural, and linguistic – against the background of emerging international framework of minority rights.

10. **A brief overview of the project:**

In the contemporary period, majority of the states are heterogeneous in the composition of their population. In fact, the phenomenon of minority cultures is so ubiquitous that there is hardly any country in the world that does not have diversity of one kind or the other. In other words, it is impossible to find a perfectly homogenous population in any given political community. The question of minority rights therefore is a universal question that is of relevance to everyone.

The reason why ethnic crises and other conflicts are springing up in every conceivable part of the world is the fact that the minority groups feel marginalized from the power-sharing and decision-making processes within their states. Formal arrangement for participation and recognition gives them a sense of support. Lack of such support

systems and, a good reading of history reveal, ill-treatment of minorities leads to conflict in society.

If minority rights are essential in a democracy to resolve conflicts and encourage inter-community harmony, the question that arises here is why states oppose recognition to minority rights. There are various reasons: minority rights are seen as inimical to individual rights; states share a deep-rooted belief that a system of minority rights would encourage outside interference and threaten the cohesion of states; It is also believed that minority problems are diverse and it is doubtful that there are universal solutions; and, lastly, that minority rights would discriminate against majorities.

This research seeks investigate the extent to which the international principles of minority protection as evolved by the United Nations and regional systems have been emulated, adopted and applied in India and along what policy lines.

11. Infrastructure created from the project:

The contingency grant was mainly for books, stationery and equipment. So, besides purchasing some books, major part of the grant has been spent in photocopying, getting stationery etc. By way of equipment, I have purchased one printer, a table lamp and computer accessories required for working from office such as capture device, storage systems like two pen drives, and two extension boards one each of 15 and 5 amps.

12. Project outcomes:

Since this is a research award for individual scholar, there is no provision for holding seminars or workshops. The published work will emerge after the completion of the research award.

13. Benefit from the project to the society:

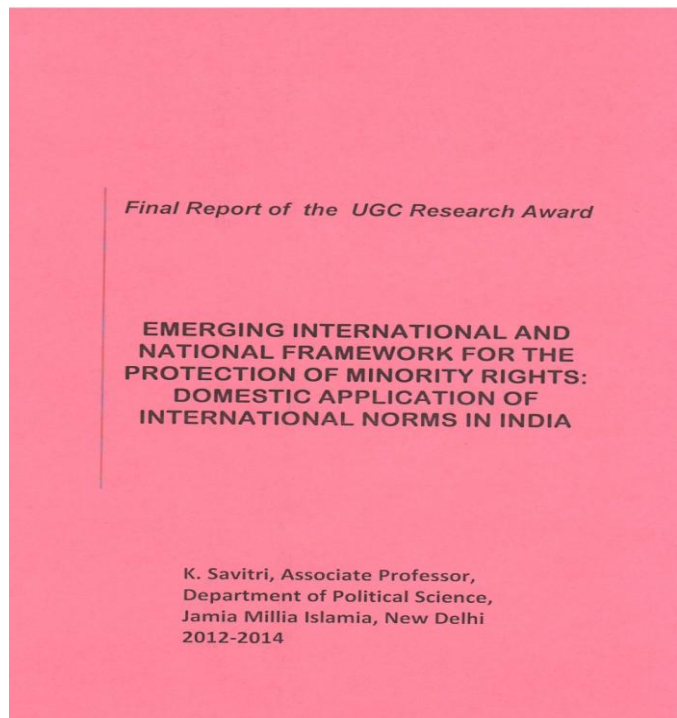
The proposed research project deals with the contemporary problems faced by minority groups in India, especially in the realm of educational rights of minorities, issues of identity, participation rights, social and economic empowerment. Addressing these issues by the political system with the aim of resolving them in amicable manner will strengthen the democratic and secular foundations of our Republic. If the minority issues are resolved in the light of international normative framework and the constitutional paradigm, India will come of age in treating its citizens fairly.

14. Any other information:

The PI, Dr. Kadloor Savitri has published some research papers since the beginning of the research award the details of which are as follows:

- a) K. Savitri, "Accommodating Diversity and Minority Rights: Initiatives for Equal Opportunities in India", Journal of Asian Politics (Biannual), vol. II, no. 1, January – June 2012, pp.95-106 [ISSN: 2230-9063]
- b) K. Savitri, "Universal Declaration of Human Rights (UDHR) and the UN Covenants", Unit 5, Course 16 of the Masters Programme in Gandhi and Peace Studies IGNOU, 2012.

- c) K. Savitri, "Contemporary Human Rights Debates", Unit 8, Course 16 of the Masters Programme in Gandhi and Peace Studies, IGNOU, 2012.
- d) K. Savitri, "Human Rights and Human Security: Reflections on India's Policy Initiatives" in Mohanan Pillai, ed., India's National Security: Concerns and Strategies, New Delhi: New Century Publications, 2013, pp.317-337
- e) K. Savitri, "Changed Context and Shifting Focus: UNHCR's Role in Repatriation and Peace-building in East Timor" in R P Misra, D. Gopal and Sailaja Gullapalli, ed., World Peace and Global Order: Gandhian Perspectives, New Delhi: Pentagon Press, 2014, pp.235-247 [978-81-8274-731-9].



Faculty of Social Science Department of Political Science

1. **Name of the Department:** Department of Political Science.
2. **Project Title:** Indian University / College Students' Perception of International Terrorism:
An Attitudinal Survey
3. **Project Investigator:** Dr. Mohammed Badrul Alam.
4. **Co-Investigator:** None
5. **Funding Agency:** UGC-MRP
6. **Amount funded:** INR 3,48,000
7. **Duration of the project:** 2 years
8. **Starting date of the Project:** February 1, 2011 to January 31, 2013
9. **Project objectives:**
 - a) To examine the attitudinal orientation of College/University students in India, towards dimensions of international/domestic terrorism.
 - b) To assemble, audit and transform the students' perception into a data. In this process the project would contribute to the research output of the School of International Politics, the world over
 - c) To develop a content based and an analytical method to study the phenomenon of terrorism.
10. **A brief overview of the project:**

Jamia Millia Islamia University, Aligarh Muslim University and some select colleges under University of Delhi, India, in a period of two years (1st February 2011 to 31st March, 2013). These questionnaires were distributed and collected in class settings, so as to eliminate the possibility of student participants consulting with each other or with members in their household while completing this questionnaire. In the first year, that is, 2011, the questionnaires were administered upon the students and responses sought from both the Indian students as well as foreign students studying in India. In the second year of the project, that is, 2012, the same questionnaires were administered upon the same students, and this was done in order to monitor the changes in the response (if any) of the students within a stipulated period of time. This report assembles audits and transforms the responses of the students into tabular form, and hence a clearer understanding on the attitude of the students towards the phenomenon of terrorism has been sought.
11. **Infrastructure created from the project:**

Books purchased from the UGC-MRP project was donated to Political Science Departmental library, Jamia Millia Islamia.
12. **Project outcomes:**

Research Paper and articles (In progress)
13. **Benefit from the project to the society:**

The outcome of the project has been very fruitful for the following reasons:

 - a) By means of this project the perception of University/College students has come to the forefront, as to what they feel about terrorism and the ongoing steps taken by the government and international community to prevent and crush it.

- b) The project has acted as a medium for the students to ventilate their perspectives on various dimensions of terrorism.
- c) The results of the surveys, as conducted during the course of the project has brought forth constructive newer ideas of students in understanding the nuances of terrorism, and these ideas would prove beneficial for the concerned authorities, who are engaged in the war against it.
- d) And ultimately, by means of this project, a contribution has been made on the research output of the School of International Politics, the world over.

Faculty of Social Science
Department of Commerce & Business Studies

1. **Name of the Department:** Department of Commerce & Business Studies
2. **Project Title:** An Analytical study of Women entrepreneurs in India, A case study of selected women ventures
3. **PI:** Dr. S.M Mustafa (Retd.)
4. **Co-PI:** prof. N.U.K. Sherwani, Dept. Of Commerce & Business Studies



5. **Funding Agency:** UGC
6. **Amount funded:** INR. 10,36,738
7. **Duration of the Project:** 2 yr
8. **Starting & Completion date of the Project:** 1.02.2010 To 10.10.2012
9. **Project Objective:** The Chief Objective Of The Present Study Is To Evaluate The Women Entrepreneurship In The Country Along With Its Problems And Prospects. Some Of The Other Objectives Of The Study Are:
 - To Explain The Concept And Evolution Of Entrepreneurship And Functions Of Entrepreneurs With Special Reference To Indian Environment.
 - To Discuss Critically Various Modes Of Entrepreneurship And The Qualities, A Good Women Entrepreneur Must Possess And To Analyze The Nature And Dimensions Of Entrepreneurship And The Views Of Various Economists On The Entrepreneurship.
 - To Portray The Concept And Role Of Women Entrepreneurs In The Indian Context An To Discuss The Growth And Development Of Women Entrepreneurs In India
 - To Highlights The Growth And Problems Of Women Entrepreneurs In The Country And The Government Assistance Extended To The Women Entrepreneurs.
 - To Assess The Role Of Women's Associations In The Growth And Development Of Women Entrepreneurship In Our Country.
 - To Submit Recommendations To The Government Authorities To Grant Various Exemptions And Subsidies To The Women Entrepreneurs In The Country.

10. **A Brief Overview**

The Study Has Led To The Interesting Finding About State Of Women Entrepreneurs In The Country Particularly. The From Of Ownership Was Primarily Sole Proprietary

and The Functioning Was Generally Flexible. The Motivation To Be An Entrepreneur Was Important For Entrepreneurial Decisions. Availability Of Resources And Finances Was Important For Entrepreneurial Decisions. The Initial Investment Was Owner – Raised In The Majority Of The Cases, Leading To Poor Capital Formation. Shortage Of Working Capital Was One Of The Common Problems In The Manufacturing Units. The Women Entrepreneurs Appeared To Have Successfully Combined Business And Family Life. Majority Of The Enterprises Headed By The Women Got Established Within Last 25 Year. The Most Important Thing That The Researcher Found Was The Problem Of Sources Of Finance, Marketing Problem, Administrative Problem And Human Resource Problem. As Such, There Is Urgent Need For The Solution Of These Problems If Women Enterprises Have To Survive And Grow. There Is Also Need For Extending Training And Research Facilities For The Women Entrepreneurs By Private And Government Agencies.

The Key Issues Arising From This Study Of Women Entrepreneurs, Together With The Views And Experiences Of Representing Women Entrepreneurs Are As Follows:

- Women Entrepreneurs Represent A Small Minority Of The Client Or Membership Group Of Most Counseling On That Provide Services For, Or Represent The Interests Of Small Businesses.
 - Few Organizations Provide Some Form Of Special Services, Policies And /Or Institutional Arrangement Of Women Entrepreneurs.
 - The Types Of Special Arrangement Described By Women Entrepreneurs Include:
 - Training, Advice Or Consultancy Targeted Solely Or Mainly At Women Entrepreneurs;
 - Start Up Programmes For Women, Particularly Those Returning To The Labour Market;
 - Development Of Or Support For Networks Of Women Entrepreneurs;
 - Special Financial Support Programmes;
 - Special Targeting Of Women In General Campaigns To Boost Level Of Entrepreneurship.
 - Equal Opportunities Policies Aiming For Equal Access For Women To Services;
 - Good Number Of Counseling On Run Or Support Networks Of Women Entrepreneurs On A Local, Regional Or National Basis. The Provision Of Training, Advice Or Counseling Services Is Also Important Activities, With Financial Support.
 - A Wide Range Of Problem And Issues Faced By Women Entrepreneurs That Are Greater Than Those Faced By Small Businesses In General, With The Most Important Being:
 - Difficulties With Access To Start Up And , To A Lesser Extent, Development Finance;
 - Perceived Discrimination On The Part Of Finance Providers;
 - Limited Management Skills E.G. In Marketing And /Or The Use Of Technology.
 - Limited Awareness Of And /Or Access To Appropriate Business Support.
11. [Infrastructure created from the project:--](#)
 12. [Project Outcomes:--](#)
 13. [Benefit From The Project To The Society:](#)

The Women Mostly Lack Of The Power Of Self – Determinations And Are Reluctant To Speak About It. Regardless Of The Socio – Economics Background, Women Seem To Accept The Rite Of Men To Discipline Them And Often Justify Physical Discrimination In Certain Circumstances. The Biological Weakness Of A Woman Makes Her An Easy Prey, Particularly To Physical Domination. She Is Often A Victim Of Physical Discrimination Not Only Outside But Also In Her Home. There Is On One To Help Them. During The Study, Hardly Any Women Entrepreneur Report That She Sought Redress Or Support From Formal Organization Or The Authorities To Deal With The Discrimination Meted Out Of Them For Fear Of Being Ostracized And Shamed By The Communities In Which They Live. The Fear That They Themselves Will Be Blamed For Provoking Men To Use Discrimination Against Them Looms Large. In The Absence Of Supportive Shelters Or Other Avenues, Its Is Very Difficult For Battered Women Entrepreneur In The India To Gather The Courage To Challenge Their Abusers In A Count Of Law Or Seek The Support Of The Few Social Service Organizations That Exist .Good Number Of Muslim Women Entrepreneurs With Rural Background Have Been Asked To Don Islamic Dress (Which Means A Sari, Long-Sleeved Blouse And The Headgear,) They Are Restricted From Carrying Out Business Activities And Public Contacts After Sunset. They Have Been Advised To Pay Extra Attention To Their Household, Husbands And Children (So That Family Life Is Not Affected By Their Business Role). The Minority Women Have Been Told To Take Care Of Their Husbands' Egos, Lest The Wives' Positions Trigger An Inferiority Complex Or Jealousy Among Them.

The Belief In Fatalism Is Consequent Upon Interpretation Of Certain Quranic Statements And Some Traditions, Which Muslim Are Obligated To Internalize Right From Their Childhood And At Every Level Of Their Development. For Muslim Individuals And Communities And Turn To Competitive In Making Their Ends Meet The Fatalism Is To Be Done Away With. As Long As This Fatal Faith Exists In Muslim Mind, Economic Development In The Muslim World Will Remain Elusive

Faculty of Social Science Department of Psychology

1. **Name of the Department:** Department of Psychology
2. **Project Title:** Psychological Capital and Employee performance: Explorations in Positive Psychology at Work
3. **PI:** Dr. Mohd Ghazi Shahnwaz
4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR
6. **Amount funded:** INR. 3,49,375
7. **Duration of the Project:** Initially 18 months but later extended twice
8. **Starting & Completion date of the Project:** Feb, 2010-May, 2013.
9. **Project Objective:**

The Project aimed to explore the given below objectives:

- I. The present study aimed to explore positive psychology at work in the Indian organizational context especially focusing on Psychological capital.
 - II. How the notions of self-efficacy, hope, resilience and optimism have been construed by the participants of the three industries?
 - III. The study explored the relationship between dimensions of positive psychology and psychological capital per se on employees' wellbeing across three market segments.
 - IV. How the dimensions of psychological capital and psychological capital per se influence employees' performance in three kinds of organizations (IT, ITES, Oil)?
 - V. As the construct of Self Efficacy, Hope, Optimism and Resilience have been proposed by different authors at different time, so the four factor conceptualization of psychological capital may not be the best.
10. **A brief overview:**

Three Statistical tools were used in the project to analyse the data. Obtained data were also analyzed using content analysis. Some of the important results are given below:

All the five ANOVAs produced significant results, implying that the employees of three organizations differed significantly from each other on all the five constructs. The mean tables also revealed consistent results, as all the five constructs were found to be maximum in the employees of oil sector, followed by IT and the least was observed in the employees of ITES industries. There was another interesting finding that the four dimensions of psy cap (and therefore psy cap also) were towards the higher side.

In regression analysis, all the psy cap dimensions were independently regressed on various performance dimensions, and finally psy cap total was regressed on it. In total there were 33 tables under the head of regression. For well being, all the four

predictors and psy cap total were able to influence it in positive and significant way in IT industry, however, in ITES, all the beta were positive but none were significant. In oil industries, self efficacy was the only significant predictor of well being. Resilience and optimism were negative but insignificant predictors of well being.

In IT industries, all the regression results were positive and significant for various performance dimensions. In IT, self efficacy emerged as the most important predictor predicted four of the performance dimensions. In ITES industries, regression results were not so consistent and some of the results were even negative. In ITES, optimism and self efficacy were the significant predictor as they both predicted four performance criteria each. In Oil industries, results were mixed, some significant and some insignificant, however, there was one consistency that most of the beta values were negative, indicating a negative kind of relationship between predictors and criteria variable. In oil industry, hope emerged as the significant predictor of all the performance dimensions (negative). Hope and resilience could not predict any one of the performance dimensions in Oil industry. In none of the regression, psy cap total predicted more variance than individual psy cap dimensions thus putting a question mark on treating psy cap as a higher order construct.

Confirmatory analysis (CFA) was carried out to check the validity of four factor conceptualization of psy cap. As per the different fit indices such as Chi square/df, GFI, CFI and RMSEA obtained for three industries it can be concluded that the four component model of psy cap is not the best conceptualization of psychological capital.

11. [Infrastructure created from the project:](#)

There was no budget for any kind of infrastructure creation in the project.

12. [Project outcomes:](#)

Research papers based on the project is in the pipeline, however, not yet complete.

13. [Benefit from the project to the society:](#)

The findings of the project report have great significance for the society at large. The discipline of psychology has the problem of taking knee jerk reactions so the latest “movement” is positive psychology. However, we have found that positives and negatives that too in the larger societal context has to be taken into account to understand the complexities of human experiences. There is a great need to develop positive strengths and capabilities but not at the expense of understanding the causes of it which may be negative at times.

Faculty of Social Science Department of Psychology

1. **Name of the Department:** Department of Psychology
2. **Project Title:** Effect of CBT on Test Anxiety, Academic Performance and Subjective Well Being Among High School Students
3. **PI:** Dr. Sushma Suri
4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR
6. **Amount funded:** INR. 3,33,250
7. **Duration of the Project:** 18 months + 06 months extension
8. **Starting & Completion date of Project:** 10th Feb. 2010 to 30th June 2012
9. **Project Objective:**
 - To find out the level of test anxiety and reaction to test (High, Average and Low) among high school male and female students.
 - To assess the subjective well being (High, Average and Low) among high school male and female students.
 - To find out the academic performance (Board Examination Result) of the male and female high school students on test anxiety, reaction to test and subjective well being.
 - To study the gender differences on the test anxiety, reaction to test, and subjective well being.
 - To study the relationship between test anxiety, reaction to test and subjective well being of male and female high school students.

10. **A brief Overview:**

The present study designed to examine and compare male and female high school students on test anxiety, reaction to test (tension, worry, test irrelevant thinking, bodily symptom) and subjective well being (positive wellbeing and negative ill being) and to see the relationship between test anxiety, reaction to test and subjective well being. 500 high school male and female students studying in public schools of Delhi were served as the sample of the study. Three scales namely Reactions to Tests, by Sarason (1984), The Westside Test Anxiety Scale by Richard (2007) and Subjective Wellbeing Test developed by Sell and Nagpal (1993) were administered to all the subjects. Obtained scores were analysed with the help of different statistical analyses. Findings of the study indicated: On the whole out of 500 students 67 (13.4) were having high test anxiety, 289 (57.8) were average and 144 (28.8) fall in the category of low test anxiety.

Out of 500 respondents 88 (17.6) were high anxious group. Out of 500, 204 (40.8%), belonged to the high SWB group where as 289 (57.8) were average. Only 7 (1.4) reported low SWB.

Girls having high anxiety showed good academic performance i.e. A1 (34.14%) A2 (24.39%) whereas low anxious group showed poor performance C1 (30.85%) and C2 (34.02%).

Regarding gender difference both male and female subjects differed significantly on test anxiety, reaction to test and SWB

11. **Infrastructure created from the project:** No provision for infrastructure
12. **Project outcomes:** Final report of the project had been accepted for publication.
13. **Benefit from the project to the society:**
 - Problems addressed are highly relevant to the study participants and other society members.
 - Obtain data provides “proof” that the issue deserves attention from different sources like parents, teachers, school authority, media etc.
 - The study is more likely to address issues of concern in a manner acceptable to parents, teachers and policy makers.
 - Suggestions for interventions and research approach are likely to be more acceptable to participants which provide greater benefit to them and the broader population.
 - Findings are more likely to reach the larger community and increase potential for implementing or sustaining recommendations.
 - The study should be treated as reference material for the academician
14. **Any other information you may think is important in this regard:**

Major themes that emerged on the basis of informal discussions with the students are summarized in the following manner:

Family expectation, status symbol, peer pressure, high-stake exams, school related stress and pressure to perform best in school are the salient factors responsible for fear anxiety depression and test anxiety. Interestingly, the manifestation of fear, anxiety, and depression largely involved physiological and somatic symptoms, although some cognitive (Worry) and behavioral responses (need to spend more time study, need tutoring, social isolation) were also reported. In general, it was noted that the younger children found it difficult to comprehend the more subtle distinctions between feelings of anxiety and depression. It is important to quotes that test anxiety and academic performance linked to subjective well being as these concepts bridges the gap between the worries and happiness of adolescents.

Hence there is a need that parents and teachers should pro-actively increased students self-esteem, self-concept and skills for dealing with stressful situations, particularly important examinations.

**Faculty of Social Science
Department of Psychology**

1. **Name of the Department:** Department of Psychology
2. **Project Title:** Young Muslim Girls in Delhi: Their Identity and Aspirations
3. **PI:** Dr. Sheema Aleem
4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR, Ministry of HRD
6. **Amount funded:** INR. 4,30,000
7. **Duration of the Project:** --
8. **Starting & Completion date of the Project:**--
9. **Project Objective:**
 - a. Enhance the understanding of the psyche of Young Muslim Girls in India
 - b. Establish the contours of the identity of Young Muslim Girls in India
 - c. Understand the aspirations of the Young Muslim Girls in India
10. **A brief Overview:**

The present study attempts to answer the following research questions:

 - a. What is the psyche of Young Muslim Girls in India?
 - b. What are the contours of the identity of Young Muslim Girls in India?
 - c. What are the aspirations of the Young Muslim Girls in India?

The present research has been designed to find out the situation at the grass-root level by conducting a field survey. A total of 240 interview schedules, 12 FGDs and 8 narratives with young Muslim girls in Delhi were conducted to generate the primary data.
11. **Infrastructure created from the project:** Nil
12. **Project Outcomes:**

A report has been submitted to the Funding Agency – ICSSR. Besides, the report is now being prepared into a book form for publication
13. **Benefit from the project to the society:**

The issue of Muslim girls has been an unresearched topic, leading mostly to speculation and intelligent guesses. The present study is one of the few empirical studies that have been conducted in an urban environment, with almost all categories of girls. The study has thrown important insights into the modernity aspects of Indian Muslims, particularly young girls.

Faculty of Social Science
Department of Adult & Continuing Education & Extension

1. **Name of the Department:** Department of Adult & Continuing Education & Extension
2. **Project Title:** Empowerment and Economic upliftment of Rural Women by Technological Interventions in Live Stock Production
3. **PI:** Dr. Shagufta Jamal



4. **Co-PI:** Executive Secretary & Consultant, Centre for Animal Husbandary & Dairy Development & World Buffalo Trust
5. **Funding Agency:** DST, Govt. of India
6. **Amount funded:** INR. 16,70,000
7. **Duration of the Project:** 3yr
8. **Starting & Completion date of the Project:** July-2010 to August-2013
9. **Project Objectives:**
 - a) To identify the priority areas of Women Empowerment in the study villages and the role they play in livestock production.
 - b) To develop and conduct training programme on the following aspects for the selected rural women having enough potentiality for livestock production:
 - i) Entrepreneurship development
 - ii) Women Empowerment
 - iii) Livestock production and health technology in selected potential species of cattle and buffalo, goat and poultry
 - c) Development of technology modules
 - d) Setting up of demonstration units with selected rural women for application of developed technology modules
 - e) To study the impact of technology based empowerment of rural women in the project villages
10. **A brief overview:**

A detail survey was made of the five selected villages of Noida, district Gautam Budh Nagar of U.P. It was intended to identify and select the target population for the project as well as to study the status of livestock technology and role played by women in these enterprises. All the selected five villages Viz. Mangrauli, Mohiapur, Gulawali, Jhatta and Yakudpur are situated on southern side of the Yamuna Expressway towards Yamuna River

The survey of five selected villages have shown that dairing has the maximum profitability and scope due to which this enterprise is growing rapidly. Generally the animals, cows, buffaloes, goats, pigs or poultry are maintained by women members of the family. In spite of this, the scientific technology of livestock production is inaccessible to them, since the women are still considered to remain in the four-walls and not to have contacts with outside world. Therefore, a need was felt to directly approach the farm women for their technological empowerment leading thereby to their Social and Economic empowerment.

11. Infrastructure created from the project:

Trained Potential women farmers having leadership quality and high receptivity were selected for raising Buffalo, Goats and Poultry demonstration units with full technology underwriting from the project. In all Sixteen Animal Demonstration Units were established with the selected Women beneficiaries in Five project villages Viz. Buffalo – 8, Goats – 6 and Poultry – 2.

12. Project- Outcome :

I. Training of Women in Livestock and Poultry Production Technology:

Three training programs, one each on dairy farming, Goat-rearing and Poultry Keeping were conducted for 40 farm Women from five villages, about 25 farm women in each course of two days duration. Technology modules for each of the three species of livestock and poultry have been developed through Participatory methods.

II. Technology Modules/ Innovations:

Specific technology modules have been developed for buffalo and goat units separately based on both macro and micro level situations:

S. No	Technology / Innovation	Buffalo	Goat	Broiler Poultry
1	Breed	Murrah breed-already available in village	Barbari goat	Day old Vaccinated chicks.
2	Feeding-Balanced Ration	Per animal Per day– a) Straw - 5 KG. b) Green fodder -10-20KG. c) Concentrate per Bufallo perday -5 KG 10 Litres milk produced.	Per day per Goat- a) Straw – 500g. b) Green Fodder – 500g. c) Concentrate per goat per day – 250g.	Initially Chick feed and then broiler feed – total 3.50 KG.
3	Vaccination	Against – HS and FMD	Against PPR and FMD	Against Ranikhet Disease

4	Deworming	Once in three months	Once in three months	Once in three months
5	Housing & Management	Proper housing	Proper housing	Proper housing

13. Benefit from the project to the Society

Through the project, the training of the rural women in livestock technology was done and the demonstration units in the villages were set up and the Cost- Benefit Analysis of the animal units was done.

It was found that the increase in knowledge of women in scientific buffalo, goat and poultry production was significant. Adoption of major technology advocated in the project villages such as deworming against parasitic infestation, colostrum feeding of animal calves was practiced and there was increase in productivity of livestock and poultry.

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department Social Work
2. **Project Title:** Active Ageing and Civil Society Response towards the problems of Elderly Women: A study of NCT of Delhi
3. **PI:** Dr. Archana Dassi



4. **Co-PI:** Nil
5. **Funding Agency:** Ministry of women & child development
6. **Amount funded:** INR. 4,33,282.
7. **Duration of the Project:** 8months
8. **Starting & Completion date of the Project:** June-2009 to March-2010
9. **Project objective:**
 - To understand the socio-economic profile of elderly women in low socio-economic neighbourhoods in NCT Delhi;
 - To examine the health, economic and social problems of the elderly women in low socio-economic neighbourhoods;
 - To look into various strategies adopted by the elderly women to adjust to their changing life situations;
 - To ascertain the range of civil society responses meant for elderly women in the NCT of Delhi and
 - To recommend the interventions for active ageing of elderly women in low socio-economic neighbourhoods in urban areas.

10. A brief overview:

Trends in most countries show a steep growth in the numbers of older women, leading to feminization of later life. Issues and special needs are generally ignored in practical and academic concerns. Whatever little concern is there, it either misrepresents or undervalues their aging experience. In terms of informal care, in contrast to older men, older women are more of 'carers' than 'receivers' in both individual and family context. There are complexities and dynamism in the lives of older women, of which we know very little. Older women's capabilities and potentials notwithstanding their short comings, in their life-long commitment (could be due to forced circumstances as well), providing domestic care and emotional support need to be appreciated. Caring role of older women may be central in their day to day lives, it must be realized that there will be 'pushes' and 'pulls' which

interact in the complex balance between wanting to care because of emotional bonds and having to care through lack of perceived or actual alternative support. The need for active ageing of the elderly women has to be highlighted. Hence the study at hand is relevant.

The study throws light into various ways of providing care, protection and active ageing of the elderly women. Specific studies on the socio economic profile of the elderly women are significant, because the issues and challenges, the elderly men and women face are quite different. Therefore the study at hand is very relevant to the need of the time. Health, economic and social problems of the elderly women of the socially and economically backward urban communities is seldom discussed in research studies or by policy makers. The problems of the elderly population in general and those of the women of socially and economically backward areas of the urban communities are different, at least in magnitude. The study under consideration has made an in-depth investigation in this regard. Elderly women adopt a number of strategies to adjust themselves in their changing life situations. The present study explores the various strategies and methods utilised by the elderly women of the poor urban settings in detail.

11. [Infrastructure created from the Project](#): No

12. [Project outcomes](#): 2 articles and a book is under publication.

13. [Benefit from the Project to the society](#):

This project will help the government to have an insight into the problems of elderly women living in slums areas and provide them welfare measures for their sustenance.

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department Social Work
2. **Project Title:** Role of Non-Governmental Organisations in Tribal Empowerment: A Study of Selected NGOs of South Gujarat
3. **PI:** Dr. Ravindra Ramesh Patil



4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR
6. **Amount funded:** INR. 3,94,525
7. **Duration of the Project:** 20 months
8. **Starting & Completion date of project:** February, 2010 to July, 2014
9. **Project Objective:**

The present study is concerned and studied only NGOs working for tribal empowerment in south Gujarat. The study based on curiosity like how NGOs perceive Tribals problems? Do they contribute to Tribals empowerment? How? In order to understand NGO led tribal empowerment process in south Gujarat, the objectives of study were to profiling of NGOs involved in tribal empowerment; examine the strategies of NGOs, and examine the specific programmes of NGOs for tribal empowerment in south Gujarat.

10. A brief overview

In order to get some insights into how do NGOs perceive tribal problems? How do NGOs contribute to social, economic, educational and political empowerment of tribals? The present study has been designed and conducted on the title, 'Role of Non-Governmental Organizations in Tribal Empowerment: A Study of selected NGOs of South Gujarat'. The reason for selecting Gujarat state is due to high proportion of NGOs in Gujarat (Hirway, 1995; Iyengar, 2000). In order to carry out the present research, an exploratory research design has been adopted and the data has been collected from the 40 selected NGOs addressing the issues of tribal empowerment. The collected data have been analysed and interpreted by generating different themes and categories relevant to the topic and presented by descriptive writing.

The findings of study highlighted the socio-political factors behind emergence of NGOs in tribal empowerment, their nature and growth in specific geographical areas of Gujarat, historical background of NGOs, issues of tribals addressed and

their contributions in social, economic, educational and political empowerment of tribals in Gujarat. Similarly, the study also highlights nature and type of empowerment processes as well as sustenance efforts promoted by NGOs within local socio-political situation of Gujarat? Finally, an attempt has been made to suggest Government, policy makers, academicians and civil society organizations for concerted efforts and effective policy implication for welfare and development of tribals in India.

11. [Infrastructure created from the project](#): NA

12. [Project outcomes](#):

The present study is an essential addition to literature of social science in general and social work in specific. The findings of study may be useful for teaching-learning process, social work education and practice, capacity building of NGOs, and the policy implications for tribal welfare and development.

13. [Benefit from the project to the society](#):

The present study indicates that in the context of exclusion and exploitation of tribals from the state, market and society, the NGOs have emerged as savior and effective instrument of development to protect and empower tribal groups. The NGOs efforts in tribal empowerment in Gujarat also show case an existence and relevance of new social movement in contemporary society. Importantly, despite of heterogeneous background and types, NGOs are systematically contributing to the tribal

Empowerment process, although they are more effective in awareness building and promotion of human rights than improving economic condition of tribals. It is in this context, the study urges for concerted efforts from state, market and civil society to bring change in tribal life condition and identity.

14. [Any other information you may think is important in this regard](#): Nil

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Network for promotion and protection of child rights & ongoing polio eradication initiative project
3. **PI:** Prof Zubair Meenai



4. **Co-PI:** Nil
5. **Funding Agency:** UNICEF, Field Office, Lucknow, UP
6. **Amount funded:** INR. 22,52,250
7. **Duration of the Project:** 12 months
8. **Starting & Completion date of the Project:** 2012-13
9. **Project objectives:**

The main objectives of the action project were to create a network of religious institutions and community leaders who could promote and protect childrens rights in the communities. The project also aimed to continue to leverage the earlier initiative of polio eradication for community awareness on the 10 point agenda of the UNICEF.
10. **A brief overview:** The project created a large network of religious institutions and community leaders who acted as champions of child rights in the community. The project area of Moradabad was particularly vulnerable for child labour and child marriage. The network was successful in creating awareness and mainstreaming a large number of children from work to school
11. **Infrastructure created from the project:** None
12. **Project outcomes:** Increased awareness among the community about childrens rights, increased mobilisation of religious and community leaders around issues of childrens rights and greater synergy and partnership between community and the Government bodies.
13. **Benefit from the project to the society:** Increased awareness among the community about childrens rights, increased mobilisation of religious and community leaders around issues of childrens rights and greater synergy and partnership between community and the Government bodies.

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Assessment Of Facilities Available For Primary & Upper Primary Education In Muslim Pre-Dominant Areas
3. **PI:** Prof Zubair Meenai



4. **Co-PI:** NIL
5. **Funding Agency:** Ministry of Human Resource Development, Govt of India
6. **Amount funded:** Rs 61,80,000/-
7. **Duration of the project:** 14 months
8. **Starting & completion date of Project:** Not Provided
9. **Project objectives:** The main objectives of the study were to assess availability of educational facilities for children in Muslim predominant areas and to find out whether improvement had taken place in enrolment and retention of Muslim children in schools in the recent years. Attempt was also made to get the views of Muslim parents about education being provided to their children specially girls and whether the inputs being given under SSA were benefiting them. Another objective was to find out whether SSA inputs specially meant for Madrasahs providing general education and not just religious education, were reaching them or not.
10. **A brief overview:**

The study covered 1054 schools in 13 states, 76 blocks, 825 villages, 80 towns focusing on the facilities that were available for primary and upper primary education for Muslim children. The study also covered around a 100 Madrasahs. The findings of the study focused on the availability and utilisation of facilities at all levels.
11. **Infrastructure created from the project:** None
12. **Project outcomes:** A report has been submitted to the Ministry of Human Resource Development, based on which the SSA would be restructured to provide benefits and facilities to the Muslim students.
13. **Benefit from the project to the society:** A critical assessment of the availability and utilisation of facilities has made the picture clearer for the Ministry and policy makers to target the inputs in a more professional manner

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Theorizing Child Participation
3. **Project Investigator:** Prof. Zubair Meenai



4. **Co-PI:** Nil
5. **Funding Agency:** Leverhulme Trust & University of Edinburgh
6. **Amount funded:** 7,51,000
7. **Duration of the project:** 18 months
8. **Starting date of the Project :** 2010-11
9. **Project objectives:**

The main objectives of the project was to create a network of academics, researchers and practitioners around the concept of child participation in the countries of Brazil, India, South Africa and United Kingdom.
10. **A brief overview:**

The project created a network of academics and practitioners who deliberated over the concept of child participation in the different cultures and tried to present the structure of a theory around the concept of child participation.
11. **Infrastructure created from the project:** None
12. **Project outcomes:**

Increased understanding of the socio-cultural determinants of the concept of child participation, learnings from good practices around child participation and putting the concept of child participation in a theoretical framework, three international seminars in Brazil, Africa and India.
13. **Benefit from the project to the society:** There is increased understanding of the concept of child rights, particularly its socio-cultural determinants.

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Baseline Survey of Madanpur Khadar, Delhi
3. **PI:** Prof. Zubair Meenai



4. **Co-PI:** Mr. Sanjai Ingole
5. **Funding Agency:** NTPC Ltd.
6. **Amount funded:** INR. 94,000/-
7. **Duration of the Project:** 3 Months
8. **Starting date of the Project:** 2013
9. **Project objectives:**
To conduct socio-economic need assessment of Madanpur Khadar Community
10. **A brief overview:**
The socio-economic need assessment was conducted for developing CSR CD interventions in the area of Madanpur Khadar
11. **Infrastructure created from the project:** None
12. **Project outcomes:**
The report was submitted and presentations were made. Based on the study, the strategies for CSR CD interventions will be prepared
13. **Benefits from the project to the society:** --

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department Social Work
2. **Project Title:** A study of institutionalized elderly women in Delhi
3. **PI:** Dr. Ushvinder Kaur Popli
4. **Co-PI:** Nil
5. **Funding Agency:** Ministry of Social Justice and Empowerment
6. **Amount funded:** INR. 3,95,600
7. **Duration of the Project:** 1yr two months
8. **Starting date of the Project:** 20th June 2012 to 20th August 2013
9. **Project objectives:**

This research aimed to seek greater understanding of the circumstances and conditions of the institutionalized elderly women. It was aimed to examine the issues faced by institutionalized women and their coping strategies with the change in life after coming to institution / old age home. An effort has been made to understand that in what circumstances do the elderly women shift to old age home? Was it under compulsion or voluntary? What social, Health psychological and financial problems do they face in the institution? What kind of care/ services are they offered and how satisfied they are with the services? What kind of changes do they need to go through? What have they done for coping with the change that has come in life and what do they do for active aging? For getting answer to these research questions the present study has been undertaken with following objectives:

- i) To study socio-economic profile of the elderly women living in old age homes located in Delhi;
- ii) To examine the psycho-social, health and economic problems of the elderly women living in old age homes;
- iii) To study various coping mechanisms adopted by the elderly women to adjust to their changing life situations;
- iv) To analyze the facilities and programmes made available to the elderly women to enhance active aging and .
- v) To recommend interventions for promoting active ageing among elderly women living in old age homes.

10. **A brief overview of the project:**

The trend of population aging clearly reveals that aging poses a major challenge and vast resources are required towards the support care and treatment of older persons. In the modern time, with the changing concept and definition of the family only very few old people are fortunate to find a place for themselves in their own/ children's home, rest have to find a seat or a room in some old age home. Old age

was never a problem in India and old age home was an alien concept but not anymore as the longevity has increased. Though institutional care for the destitute has always existed in India, but old age homes for elderly as an alternate living arrangement is a recent concept. Trends in most countries show a steep growth in the numbers of older women, leading to feminization of later life. Society needs to be more informative and sensitive towards women. The need for active ageing of the elderly women has to be highlighted. Elderly women adopt a number of strategies to adjust themselves in their changing life situations. Health, economic and social problems of the institutionalised elderly women are seldom discussed in research studies or by policy makers. Therefore the study at hand is very relevant to the need of the time, it was taken up to make an in-depth investigation in this regard and explore the various strategies and methods utilised by the elderly women in coping with later years of life in the old age homes.

The present study has been undertaken with the aim to examine the issues faced by institutionalized women and their coping strategies. The present study was exploratory cum descriptive in nature and the universe consisted of the elderly inmates who were getting institutional care from the registered old age homes located in Delhi and NCR. As far as present study is concerned 27 old age homes were selected located in different areas of Delhi and NCR. The total sample consisting of 380 elderly women residing in old age homes of Delhi and NCR were selected to be interviewed. From each home one head of the institution and one care taker or social worker (27+27) have been taken; thus making the total sample of 434. As the respondents are old and unable to fill in the information a Structured Interview schedule was designed for collecting information from the institutionalized elderly women. An interview guide was formulated to collect information from officials and significant others engaged in helping the institutionalized elderly women to cope with life situations. For qualitative interpretation in depth case studies have been carried out in order to substantiate the quantitative information and get some more insight on the issue.

The study commenced 20th June 2012. In the first month relevant literature was collected reviewed in order to prepare the tools. Sampling procedure was completed after collecting list of old age homes and the number of residents in the old age homes. The tools were pre-tested followed by the training of investigators to fill the tool and conduct interviews. Codebook and master sheet for the data entry were prepared. Data entry was also carried out simultaneously. Data collection and the data entry were completed by end of November.

The collected data was collated, checked for consistency and processed using data processing software like the SPSS and word- excel. Subsequently, frequency and cross-tables were generated and interpreted. Thirteen case studies have been framed and used at appropriate places.

On the basis of the findings a report has been produced which has been divided into eight chapters: the first chapter contains the Introduction , review of literature and research methodology , the second chapter deals with the Socio-economic profiles of the elderly women in OAH, the third chapter talks about the Economic conditions of inmates in OAH , fourth chapter gives an idea about Health profile of the elderly women in OAH's, the fifth chapter gives detailed Information about establishment, infrastructural and administrative conditions of the old age homes whereas the sixth chapter talks about the Life of the elderly women in the old age homes, the seventh chapter shares different Coping mechanism and techniques and the last i.e. the eighth chapter concludes the study by recommending appropriate ways to deal with issues of elderly women in old age home and suggest methods of coping with the changed scenario and boast active aging.

11. Infrastructure created from the project:

The contingency grant was mainly for books, stationery and equipment. So, besides purchasing some books, major part of the grant has been spent in photocopying, getting stationery etc. By way of equipment, I have purchased one printer and computer accessories required for working from office such as pendrive.

12. Project outcomes:

Since this is a research award for individual scholar, there is no provision for holding seminars or workshops. The published work will emerge after the completion of the research award.

13. Benefit from the project to the society:

The problems of the old people are not something new in our society. The present scenario in India shows that old age has started emerging as a social problem in the Indian society. There is an emerging need to pay greater attention to aging issues and promote holistic policies and programs for dealing with ageing society. Care of the older persons is a great challenge for the government of the country. Trends in most countries show a steep growth in the numbers of older women, leading to feminization of later life. Although institutional care of the destitute has always existed in India, but for the elderly especially as an alternate living arrangement it is a recent concept. In India family is idealized as an institution that could take care of older persons. However, reality tends to vary from this perception, for many older persons, living with their married children will be more difficult than living alone and many do not have a choice and have to live separately from their adult children. In these circumstances establishment of institutions are required to take care of the elders, managed by government and non-government organizations. Health,

economic and social problems of the institutionalized elderly women are seldom discussed in research studies or by policy makers. Therefore the study at hand is very relevant to the need of the time, it was taken up to make an in-depth investigation in this regard and explore the various strategies and methods utilised by the elderly women in coping health issues in with later years of life in the old age homes. The present study would help the policy makers/ NGO's / and other Trusts running Old age homes to understand the needs and the problems of the inmates , especially elderly women and improve the services provided in the homes. It will make the policy makers to think seriously about the implementation of the National Policy for Older People (NPOP). This would highlight the need for having trained professionals to take care of the elderly in these old age homes and organize training for people to handle the needs of elderly in a more professional manner.

**Faculty of Social Science
Department of Social Work**

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Need Assessment Survey and Impact assessment study in connection with CSR-CD Programme at Badarpur Thermal Power Station.
3. **PI:** Prof A.S Kohli
4. **Co-PI:** Dr. Habeebul Rahman V M
5. **Funding Agency:** NTPC (Thermal power station, Badarpur)
6. **Amount funded:** INR. 3,32,000
7. **Duration of the Project:** 3 Months
8. **Starting & Completion date of Project:** 2011
9. **Project Objectives:**
To assess the needs of community of Badarpur that is adjacent to NTPC plant, and to develop CSR CD interventions
10. **A Brief overview:**
The socio-economic need assessment was conducted for developing CSR CD interventions in the area
11. **Infrastructure created:** None
12. **Project Outcomes:**
The report was submitted and presentations were made. Based on the study, the strategies for CSR CD was prioritized.

**Faculty of Social Science
Department of Social Work**

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Need Assessment Study in the Surrounding Villages of Badarpur
3. **PI:** Prof A. S. Kohli
4. **Co-PI:** Dr Habib-ul-Rahman
5. **Funding Agency:** NTPC Ltd.
6. **Amount funded:** INR. 1,32000/-
7. **Duration of the Project:** 3 months
8. **Starting date of the Project:** 2011
9. **Project objectives:** To assess the needs of adjacent community of NTPC plant, and to evaluate their CSR CD interventions
10. **A brief overview:** The project is conducted five yearly for bringing improvements in their interventions.
11. **Infrastructure created from the project:** None
12. **Project outcomes:** The report was submitted and presentations were made. Based on the study, the strategies for CSR CD were prioritized

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Assessment & Impact Study of CSR- CD Program BPTS NTPC, New Delhi
3. **PI:** Prof A. S. Kohli
4. **Co-PI:** Dr Habib-ul-Rahman
5. **Funding Agency:** NTPC Ltd.
6. **Amount funded:** INR. 2,00,000
7. **Duration of the Project:** 3Months
8. **Starting date of the Project:** 2011
9. **Project objectives:**
To assess the needs of adjacent community of NTPC plant, and to evaluate their CSR CD interventions
10. **A brief overview:**
The project is conducted five yearly for bringing improvements in their interventions.
11. **Infrastructure created from the project:** None
12. **Project outcomes:**
The report was submitted and presentations were made. Based on the study, the strategies for CSR CD were prioritized

Faculty of Social Science
Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Education and society: A study of Schools of Kalgidhar trust
3. **PI:** Prof A. S. Kohli
4. **Co-PI:** Nil
5. **Funding Agency:** Kalgidhar trust
6. **Amount funded:** INR. 1,21,000/-
7. **Duration of the Project:** 3 Months
8. **Starting date of the Project:** 2007
9. **Project objectives:**
To study the impact of education of schools of the trust in the communities and assess its impact on the people at family, community and village levels.
10. **A brief overview:**
The study explored the impact of the educational program on inculcating religious values and education in shaping the personalities of children. The recommendations were made for the overall improvement in the performance and the relationship between the education, entrepreneurship and society.
11. **Infrastructure created from the project:** None
12. **Project outcomes:** The report was submitted and presentations were made

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** End Term Evaluation Study on Child Labour Project implemented by CASP – PLAN in the localities of Madanpur Khadar, Khanpur and Sangam Vihar in Delhi.
3. **PI:** Prof N. U Khan
4. **Co-PI:** Nil
5. **Funding Agency:** CASP-PLAN
6. **Amount funded:** INR. 3,00,000
7. **Duration of the Project:** Information Not Provided.
8. **Date of the completion project:** 2010
9. **Project objectives:**

Child labour in India is a human rights issue for the whole world and India As well. An evaluation study of Child Labour Project of CSAP-PLAN in the areas of *Madanpur Khadar, Sangam Vihar and Khanpur* in Delhi was conducted with the Objectives: to understand the impact of the intervention of CASP in the program area, to evaluate all the activities and interventions implemented through the project and to assess the learning and failures during the time period.
10. **A brief overview:**

The evaluation was carried out taking baseline data collected earlier in the year on child labour which serves as a bench mark to study the impact of interventions of the project. The sample was based on the random sampling method. From a list of 323 children 200 were chosen randomly representing each of the three project areas i.e. Madanpur Khadar Khanpur and Sangam Vihar. The research tools used in the study were Interview, Focused Group Discussions (FGDs) and Case Studies.
11. **Infrastructure created from the project:** Nil
12. **Project outcomes:**

It was found that most of the potential child workers and their families were from eastern states of Bihar, West Bengal and Assam. The program was successful in withdrawing and mainstreaming the target child workers in the project areas.
13. **Benefits from the project to the society:** Nil

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Research study on Self Help Groups assessment of Micro Credit and preparedness for Micro Enterprise, under Family Strengthening Programme of SOSCV at Bawana, New Delhi
3. **PI:** Prof N. U Khan
4. **Co-PI:** Nil
5. **Funding Agency:** SOS Village
6. **Amount funded:** INR. 1,50,000
7. **Duration of the Project:** Information Not provided.
8. **Date of the Completion Project:** 2010
9. **Project objectives:**

The study aimed at evaluating the preparedness of 7 Self Help Groups of SOSCV Bawana, New Delhi with the objectives

 - a) To conduct an analysis of the Strengths and weaknesses of the SHGs in terms of
 - b) To study the market for initiating the group or individual livelihood programmes and draw out a possible option list
 - c) To identify areas of skill (Business/vocational) for SHG members who can enhance their capacities for livelihood micro enterprise based on a) and b).
10. **A brief overview:**

SOS India is a renowned organisation which focuses on working towards development and welfare of children. This evaluation study focused on the evaluation of SHGs formed by SOS under its Family Strengthening Programme (FSP). **Methodology:** The methodology of study included SHG analysis and market analysis. Tools of information collection included i) Interviews of the members of the SHGs , ii) Focussed group discussion with the SHG regarding the strengths and weaknesses of skills and capacities of the individual group members, iii) Record analysis and iv) Market survey.
11. **Infrastructure created from the project:** Nil
12. **Project outcomes:**

Findings: The findings revealed that the SHGs formed consisted of women from homogeneous economic and family situation backgrounds mostly belonging to BPL families. The SHGs were formed on the objective of women empowerment for helping widows and other poor women who were beneficiaries of the FSP programme of SOS to take charge of their lives.

The groups were formed as per the convenience of women and the membership resulted in liberation of the members from debt of local money lenders; making them economically independent.

The groups were aware of the government schemes for its members through inputs provided by the SOS facilitators and expected support of SOS to meet the needs of training and Capital. All the women possessed home based skills and talents.

13. [Benefits from the project to the society](#): --

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** External Evaluation of Jan Sikshan Sansthan in the Districts of Maunath Bhanjan and Deoria in Uttar Pradesh
3. **PI:** Prof N. U Khan
4. **Co-PI:** Nil
5. **Funding Agency:** National Literacy Mission, Govt. of India
6. **Amount funded:** INR. 5,00,000
7. **Duration of the Project:** Information not provided
8. **Date of the completion Project:** 2010
9. **Project objectives:**

The Govt. of India sanctioned Jan Shikshan Sansthan for Mau Nath Bhanjan to Pandit Madan Mohan Malviya Vidya Mandir. JSS Mau offer programmes under Vocational Training and life enrichment educational programmes. Information for the evaluation was gathered from three different sources:

 - (i) People associated with or having knowledge about the Programmes of Mau
 - (ii) Field Observations of Ongoing Activities and
 - (iii) Records and Reports.
10. **A brief overview:**

The evaluation brought out that District Administration and local self-government participated in the programme activities but the participation of local ZSS was marginal. The programmes were found to be relevant to the local clientele. JSS Mau had a zero dropout rate which is positive and the quality and quantity of the infrastructure for the programmes at JSS Mau was found to be adequate. The linkage of courses and vocational training to literacy requires improvement. The performance on organizing skill development courses was more than satisfactory, in terms of batches organized and beneficiaries covered. The other stakeholders such as the community held the JSS in high regard and supported its activities
11. **Infrastructure created from the project:** Information not provided
12. **Project outcomes:** Information not provided
13. **Benefits from the project to the society:** Information not provided

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Feasibility studies of NGOs for setting up Jan Sikshan Sansthan in the districts of Sitamarhi, Samastipur, Nawada, Rohtas and Vaishali districts of Bihar and East Delhi, West Delhi and South Delhi districts in the state of Delhi.
3. **PI:** Prof N. U Khan
4. **Co-PI:** Nil
5. **Funding Agency:** National Literacy Mission, Govt. of India
6. **Amount funded:** INR. 2,50,000
7. **Duration of the Project:** Information not provided
8. **Starting date of the Project & date of completion:** 2009 completed
9. **Project objectives:**

The Principle Investigator conducted a feasibility study of different NGOs in districts of Sitamarhi, Samastipur, Nawada, Rohtas and Vaishali districts of Bihar and East Delhi, West Delhi and South Delhi districts in the state of Delhi. The NGOs covered for feasibility study for the purpose of establishing Jan Shikshan Sansthan (JSS) included the following organizations.

 1. New Opportunities For Women
 2. Indian Adult Education Association
 3. Prayas Juvenile Aid Centre
 4. Bihar Seva Sansthan
 5. Youth Federation
 6. Akhil Bhartiya Shikshit Berojgar Yuvak Kalyan Sansthan
 - 7 Sister Nivedita Memorial Trust
10. **A brief overview:**

Methodology:

 - Verification of registration and other relevant documents of the respective organization.
 - Visit to the Head office of the NGOs and the field sites were undertaken to understand the activities undertaken by them
 - Annual reports and Accounts to understand the financial situation
 - After developing an understanding about the organizations on the above mentioned indicators, recommendations were suggested for setting up of JS
11. **Infrastructure created from the project:** Information not provided
12. **Project outcomes:** Information not provided
13. **Benefits from the project to the society:** Information not provided

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** External Evaluation of Special Female Literacy Programme in the District of Godda, Jharkhand
3. **PI:** Prof N. U Khan
4. **Co-PI:** Nil
5. **Funding Agency:** National Literacy Mission, Govt. of India
6. **Amount funded:** INR. 2,00,000
7. **Duration of the Project:** 2yr
8. **Starting date of the Project:** 2006 to 2008
9. **Project objectives:**

The teaching under Special Female Literacy Programme in Godda district commenced in June 2006. The teaching programme in the district was over in December 2008 and thereafter External Evaluation of Special Female Literacy Campaign was conducted.

The objectives of the external evaluation were: to carry out an objective assessment of the literacy level attained by the female neo-literate who participated in the campaign, to provide feedback to the district about the outcome of the campaign, its strengths and weaknesses and assessment of outreach of the programme, and its impact on SC \ ST, and Minorities etc.

10. **A brief overview:**

It was found that overall, 69.84 per cent of the genuine learners who took the test attained NLM literacy norm. The achievement level was 58.66 per cent at the level of district current learners and 41.25 per cent of the district target. It was recommended that the office of the ZSS needs to be strengthened.

11. **Infrastructure created from the project:** Information not provided
12. **Project outcomes:** Information not provided
13. **Benefits from the project to the society:** Information not provided

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** External Evaluation of Post Literacy Programmes in the Districts of Rohtak in Haryana.
3. **PI:** Prof N. U Khan
4. **Co-PI:** Nil
5. **Funding Agency:** National Literacy Mission, Govt. of India
6. **Amount funded:** INR. 3,00,000
7. **Duration of the Project:** Information not provided
8. **Starting date of the Project & Completion:** 2008 completed
9. **Project objectives:**

The evaluation of Total Literacy Campaign was conducted with the main concern on the achievement of the district in 3R vis a vis the target of illiterates in the district. The objectives of the external evaluation were to assess the effectiveness of the programme in terms of the extent to which they could make an impact on the life of the learners in particular and community in general
10. **A brief overview:**

The evaluation showed that Quality Index of **72.4** is good. It shows that district Rohtak has done a satisfactory work.
11. **Infrastructure created from the project:** Nil
12. **Project outcomes:**

Our name was referred by NLM for the evaluation of PLP Rohtak on 25.6.2008 vide letter no. F.7-2/2006-AE.5 and the agreement with JSS Rohtak were signed on 19.7.2008. I visited the district on 18.7.2008 to discuss the broad modalities of the evaluation and sign the agreement. The evaluation team visited the district in August'2008 to carryout the fieldwork.

The sample for the study of PLP was drawn from the data supplied by the district, taking village as the last sample unit. The villages were serially arranged and proportionate sample block wise was selected by random method using random table. All the MOP learners in sample villages formed the sample for MOP learners.
13. **Benefits from the project to the society:**

The TLC was completed in July 1995. External Evaluation Report of TLC was not available with the JSS. On enquiry it was revealed that report was destroyed in the floods in 1995. b. PLP was sanctioned in March'2006 and teaching started in May – June'2007. Project was completed in February'2008. The process of external evaluation was initiated and the evaluation got completed in October'2008. The final report was submitted in October'2008.

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** National Literacy Mission, Ministry of Human Resource Development, Govt. of India sponsored External Evaluation of Total Literacy Campaigns in the Districts of Gorakhpur, in Uttar Pradesh
3. **PI:** Prof N. U Khan
4. **Co-PI:** Nil
5. **Funding Agency:** National Literacy Mission, Govt. of India
6. **Amount funded:** INR. 3,00,000
7. **Duration of the Project:** Information not provided
8. **Starting date of the Project & Completion:** 2008 completed
9. **Project objectives:**

At the time of approval of the project, the district had identified 2, 66,741 non – literate in the age group of 10-35 years on the basis of door – to – door survey. The district accepted this figure of non-literate (114042 males and 152699 females) as the target for its TLC programme. The external evaluation was conducted with the following objectives:

To carry out an objective assessment of the literacy level attained by the neoliterate who participated in the campaign, to provide feedback to the district about the outcome of the campaign, its strengths and weaknesses. Assessment of outreach of the programme, and its impact on SC \ ST, Women, and Minorities etc.

10. **A brief overview:**

Overall, 67.23 per cent of the genuine learners took the test attained NLM literacy norm. The achievement level was 57.53 per cent at the level of district current learners and 38.11 per cent of the district target. On the basis of the result of actual learners appeared and tested, the performance of Khajni is the best from among the blocks, followed by Kaudiram block. An analysis of the performance of learners in reading, writing and arithmetic indicates that the learners scored maximum marks in arithmetic, followed by reading and writing tests. A noteworthy feature of the results is that male learners performed better than women in all the three areas of competency.

11. **Infrastructure created from the project:**

12. **Project outcomes:**

In terms of recommendations it was suggested that district should make efforts to strengthen the office of the ZSS by appointing the secretary on a regular basis rather than giving additional charge to some officials. The involvement of development functionaries, in literacy programmes, is also very important and needs to be improved in the district. Literacy programme needs to be integrated with the development programme of the district

Faculty of Social Science
Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Runaway Children Restored with Families: A study of their current status.
3. **PI:** Dr. Neelam Sukhramani
4. **Co-PI:** Dr. Habeebul Rahman.
5. **Funding Agency:** Chetna Plan India
6. **Amount funded:** INR. 1,50,000/-
7. **Duration of the Project:** 6 months
8. **Starting date of the Project & Completion:** 2013
9. **Project objectives:**
To study the effectiveness of restoration and rehabilitation of run-away children by Juvenile Justice System
10. **A brief overview:**
The project involved extensive travelling to the remote places in Haryana and UP to trace the run-away children who were restored to their families, to study and analyse their present status, and implications for the intervention strategies.
11. **Infrastructure created from the project:**
12. **Project outcomes:**
The report threw light on the issues faced by the runaway children and their families, and also the pitfalls in the JJ System.

Faculty of Social Science
Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Need Assessment and Impact Evaluation Study of CSR/CD Projects of NTPC Dadri.
3. **PI:** Dr. Habeebul Rahman.
4. **Co-PI:** Mr. Sanjai Ingole
5. **Funding Agency:** NTPC Ltd.
6. **Amount funded:** INR. 4,00,000/-
7. **Duration of the Project:** 6 months
8. **Starting date of the Project & Completion:** 2012
9. **Project objectives:**
To assess the needs of adjuscent community of NTPC plant, and to evaluate their CSR CD interventions
10. **A brief overview:**
The project is conducted five yearly for bringing improvements in their interventions
11. **Infrastructure created from the project:**
12. **Project outcomes:**
The report was submitted and presentations were made. Based on the study, the strategies for next five years in CSR CD were prioritized.

Faculty of Social Science Department of Social Work

1. **Name of the Department:** Department of Social Work
2. **Project Title:** Need Assessment and Impact Evaluation Study of CSR/CD Projects of NTPC Faridabad.
3. **PI:** Dr. Habeebul Rahman



4. **Co-PI:** Mr. Sanjai Ingole
5. **Funding Agency:** NTPC Ltd.
6. **Amount funded:** INR. 4,00,000/-
7. **Duration of the Project:** 6 months
8. **Starting date of the Project & Completion:** 2013
9. **Project objectives:**
To assess the needs of adjacent community of NTPC plant, and to evaluate their CSR CD interventions
10. **A brief overview:**
The project is conducted five yearly for bringing improvements in their interventions
11. **Infrastructure created from the project:**
12. **Project outcomes:**
The report was submitted and presentations were made. Based on the study, the strategies for next five years in CSR CD were prioritized.

Faculty of Social Science Department of Sociology

1. **Name of the Department:** Department Sociology
2. **Project Title:** Social Isolation of Minorities: A Comparative Study of Muslim Localities in Delhi and Meerut City.
3. **PI:** Dr. Arvinder A. Ansari
4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR
6. **Amount funded:** INR. 7,50,350
7. **Duration of the Project:** 18months
8. **Starting & Completion date of the Project:** March -2011 to Sept. 2013
9. **Project Objectives:**

From the standpoint of the social scientist, the ghetto as an institution is of concern to all because it represents a case of social isolation and exclusion which leads to the strengthening of ethnic identity. The proposed research aims to investigate the process of ghettoisation among the Muslims and its impact on the community vis-à-vis the larger society. It aspires to examine whether ghettos are voluntarily created or are imposed by some external agencies. What are the forces that maintain this isolation and how this isolation shapes the character of the individuals subsumed in the community.
10. **Brief Overview of the Project:**

Muslims constitute the largest religious minority in India. After the partition of the country in 1947, most of the Muslims decided to stay in the country despite the large-scale killing and violence. Those who remained in India boldly faced the onslaught of communal violence or the threat of it which still looms large in some parts of the country. Periodic anti-Muslim riots and pogroms has generated the process of ghettoisation - shifting of communities from areas inhabited by the dominant community – among the Muslims in search of safety of their life and property. This is more pronounced in communally sensitive towns and cities. However, while living in ghettos seems to be giving them a sense of security because of their numerical strength, it has not been to the advantage of the community. Muslims living together in concentrated pockets has made them easy targets for neglect by municipal and government authorities. Water, sanitation, electricity, schools, public health services, banking facilities, roads and transport facilities- are all in short supply in these areas. Social boycott of Muslims in certain parts of the country has forced Muslims to migrate from places where they lived for centuries. This has affected their employability and the means of earning a livelihood. Ghettoisation, therefore, has multiple adverse effects: inadequacy of infrastructural facilities, shrinking common spaces where different communities can interact and reduction in livelihood options.
11. **Infrastructure Created from the Project:**
12. **Project Outcomes:**

(a) One research paper presented at a national seminar held in Pondicherry in March 2014.

(b) One research paper has been selected for publication in an edited volume (forthcoming).

13. **Benefit from the Project to the Society:** The findings of the study can help in understanding the nature of ghetto life. It is important study for Policy Intervention. In a religiously plural society, inter-community interactions at the personal as well as economic level are of utmost importance in preserving communal harmony and peace. Obviously, therefore, the trend towards increasing ghettoisation of Muslims in several places is a disturbing phenomenon that needs to be seriously and urgently addressed.

14. **Any other information:**

Paper titled Social Exclusion of Minorities: A comparative Study of Muslims in Delhi and Meerut. published in Crafting Inclusive Development. The confluence of Civil Society, State and Social Movements.ed by K.Gulam Dasthagir

Faculty of Natural Sciences

Department of Physics

1. **Name of the Department:** Department of Physics.
2. **Project Title:** Effects of Swift Heavy Ion irradiation conjugated polymers.
3. **Project Investigator:** Prof. Mohammad Zulfequar.
4. **Co-Investigator:** Dr. Azher Majid Siddiqui.
5. **Funding Agency :** Nuclear Science Centre, New Delhi
6. **Amount funded:** Rs.2.25 Lacs
7. **Duration of the project:** 4 year
8. **Starting date of the Project:** 2005-2009
9. **Project objectives:**

The polymer powders of PoT, PmT and poly (3-methyl thiophene) were prepared by chemical oxidation polymerization method and PoT, PmT were doped with p-toluene sulphonic acid at different concentrations (2,4,6,8 and 10% (w/w)). The polymer powders were then blended with PVC to achieve thin films. The powders and blends were characterized by using DC conductivity measurement, X-Ray Diffraction, FTIR and UV-Visible studies. After characterization the blends were irradiated by 60 MeV C^{5+} ions, 60 MeV Si^{5+} and again characterized by the above techniques. After irradiation with C^{5+} ions the optical band gap decreases and DC conductivity decreases with decrease in crystallinity in Pot-PVC blends. Whereas, Si^{5+} ion irradiation leads increase in the crystallinity and decrease in optical band gap. Depending on electronic energy loss (S_e) value the crystallinity and optical band gap changes in different way.
10. **A brief overview of the project:** Under the project entitled "Effects of SHI Irradiation on conjugated polymers" the following work has been carried out. Samples prepared:
 - a) Poly (o-toluidine) powder
 - b) Poly (m-toluidine) powder
 - c) poly (o-toluidine) – polyvinylchloride blends
 - d) poly (m-toluidine) – polyvinylchloride blends
 - e) Poly(3-methyl thiophene)

Poly (3-methyl thiophene) powder was dissolved in chloroform and the films are prepared on glass and silicon substrates and irradiated with Si^{5+} ions. The optical band gap found to decrease after irradiation, DC conductivity found to increase and crystallinity found to decrease. The residual gas analysis has been carried out on the all above samples and found the evolution of H, C, N, CH_4 , C_2H_6 and C_3H_8 gasses from PoT and PmT blend films. So the changes in optical, structural and conductivity properties are attributed to the evolution of gasses during irradiation leading to chain scissoring, bond breaking and new bond formation in conducting polymers. These results were published in 6 International Journals.
11. **Infrastructure created from the project:**

Preparation of polyaniline thin films by RF-Plasma polymerization: Suitable modifications are done in a RF sputtering set up to facilitate synthesis of polyaniline thin film by RF- plasma polymerization process. The films prepared are highly cross-linked, amorphous in nature and have band gap of 2.07eV. SEM images show the

uniformity in film morphology. The refractive index of the films is determined to be 1.11 and dielectric constant is 1.12 at a wavelength 620nm in the visible region.

12. **Project outcomes:**

- a) Effects of SHI irradiation on Se-Te-Sn thin films, S. Kumar, G. B. V. S. Lakshmi, M. Husain and M. Zulfequar, European Physical Journal: Applied Physics, 35, (2006) 155-158.
- b) Optical studies of SHI Irradiated poly(o-toluidine)-PVC blends, G. B. V. S. Lakshmi, Vazid Ali, A. M. Siddiqui, P. K. Kulriya and M. Zulfequar, European Physical Journal: Applied Physics, 39(3) (2008) 251-256.
- c) 60 MeV C⁵⁺ ion irradiation effects on conducting poly (o-toluidine)-poly Vinylchloride blend films, G. B. V. S. Lakshmi, Vazid Ali, Azher M. Siddiqui, P. K. Kulriya, M. Husain and M. Zulfequar, Radiation Effects and Defects in Solids, 163(2) (2008) 127-134.
- d) Effects of 60 MeV C⁵⁺ ion irradiation on PmT-PVC and p-TSA doped PoT-PVC blends, G. B. V. S. Lakshmi, Azher M. Siddiqui, Vazid Ali, Pawan K Kulriya and M. Zulfequar, Nuclear Instruments and Methods in Physics Research B, 266 (2008) 1685–1691.

Faculty of Natural Sciences

Department of Physics

1. **Name of the Department:** Department of Physics.
2. **Project Title:** Designing and fabrication of Photon drag detector and TEA, CO₂ laser as their evaluation
3. **Project Investigator:** Prof. M. Zulfequar, Department of Physics, Jamia Millia Islamia.
4. **Co-Investigator:** Prof. M. Husain, Department of Physics, Jamia Millia Islamia.
5. **Funding Agency:** DRDO-LASTECH, New Delhi.
6. **Amount funded:** INR 37.31 Lacs
7. **Duration of the project:** 3 years
8. **Starting date of the Project:** September 29, 2006 to September 29, 2009
9. **Project objectives:**

Main objective of the project was as follows:-

 - (a) Design, development and fabrication of sub-nanosecond response time Germanium photon drag detectors.
 - (b) Design, development and fabrication of gain-switched transversely excited carbon-dioxide laser of about 100 kW peak power.
10. **A brief overview/write up of the project:**

(A) Designing and Fabrication of Photon Drag-Detectors:
While studying the responsivity of the Ge photon drag detector it was found that the Fresnel reflection loss at the incident end of the germanium bar and the multiple reflections in the bar reduce the value of the fraction of the incident laser radiation which actually travels in the germanium bar. If the exit end of the detector is cut at a critical angle (14.5°), then 64 % of incident laser radiation can travel in the Ge bar. To increasing the responsivity of detector choice of length and resistivity of the germanium was an important design parameter. In view of the above, two type of photon drag detectors have been designed and fabricated with following specifications.

 - (a) Resistivity and dimension of the Ge bar choosen as-
 - (i) *Type A detector*: 1.0 Ω -cm, p-type, 2mm \times 2mm \times 20mm
 - (ii) *Type B detector*: 2.5 Ω -cm, p-type, 2.5mm \times 2.5mm \times 30mm
 - (b) Responsivity and response time of the detectors for CO₂ laser is as follows:
 - (i) *Type A detector*: 674 mV/MW, nanosecond/ sub nano-second
 - (ii) *Type B detector*: 872 mV/MW, nanosecond/ sub nano-second
 - (c) Damage Threshold Intensity: 20 MW/cm²



Figure: 1.A photograph of the fabricated Photon Drag Detector (Type A)

(B) Designing and Fabrication of TEA CO₂ Laser:

Design and fabrication of laser cavity is an important aspect of a laser oscillator. To obtain low divergence, a plano-concave configuration has been chosen. A quartz mirror with thick coating of aluminium has been used for fully reflecting mirror and a partially Aluminium coated flat germanium mirror has been used to get laser output. Instead of brewsterized ends, adjustable laser mirrors in vacuum tight holders has been used. Linear pin-rod configuration has been used for electrical excitation in which cathode consist of a string of about 116 pins, 7.5 mm apart each being loaded with a 1.0 K Ω carbon composition resistor (1 Watt). The anode is a sand blasted copper tube of 7 mm diameter. The current excitation pulses are obtained by discharging a 0.02 μ F capacitor of 10 nH with the help of a spark gap through the laser electrodes using variable high voltage DC supply. Partial pressure of CO₂ = 35 Torr, N₂ = 20 Torr and He = 30 Torr are about the optimum for highest gain. The peak gain in CO₂ at 25 Torr and N₂ at 25 Torr was found to be maximum. This is quite encouraging if one wishes to avoid Helium in this binary mixture of equal ratio.



Figure 2. A Photograph of fabricated TEA CO₂ Laser

11. [Infrastructure created from the project](#):--

12. [Project outcomes](#): One each of two types (Type A and Type B) of detectors and TEA CO₂ Laser have been fabricated and handed over to LASTEC for their evaluation, use and retention

Faculty of Natural Sciences

Department of Physics

1. **Name of the Department:** Department of Physics.
2. **Project Title:** Growth of multi-walled carbon nanotubes suitable for device applications (FEDs)
3. **Project Investigator:** Prof. Mushahid Husain
4. **Co-Investigator:** None.
5. **Funding Agency:** Defence Research & Development Organisation (DRDO) Ministry of Defence, Government of India
6. **Amount funded:** INR 38.998 Lacs.
7. **Duration of the project:** 3 ½ Year
8. **Starting and completion date of the Project:** October 01, 2007 to March 31, 2011.
9. **Project objectives:**
 - a) To synthesize multi-walled carbon nanotubes using a number of elements as well as alloys as catalyst.
 - b) Synthesis of multi-walled carbon nanotubes by chemical vapor deposition under some set growth conditions. Thin film of some novel catalyst will be deposited on silicon substrate by RF sputtering for the growth of MWNTs.
 - c) The grown carbon nanotubes shall be characterized by scanning electron microscopy (SEM) to investigate the effect of growth parameters on the grown CNT morphology.
 - d) To see the effect of various growth parameters on the morphology and structure of multi-walled carbon nanotubes.
 - e) To study the field emission properties of MWNTs suitable for the application of FEDs.
 - f) J-E curves of these MWNTs will be measured to study the field emission properties.
10. **A brief overview of the project:**

The carbon nanotube has been grown successfully by Low Pressure Chemical Vapor Deposition Method at a temperature of 600°C. The film of different catalyst (Fe, Ni, Co, etc.) has been grown by RF sputtering methods. The average diameter of the CNTs film characterized using Scanning Electron Microscope (SEM) is in the range 20-50 nm with length of several micrometers. Raman spectra indicate that the CNTs are highly graphitized.

The effect of catalyst-deposition methods on the alignment of carbon nanotubes has been studied. For this purpose, the film of Iron catalyst has been grown by Dip coating, Adhesive dip coating, Electrolysis and RF sputtering methods and found that the RF sputtering method is much better than other methods. The SEM investigations showed that the alignment of carbon nanotubes in an electrolysis and RF sputtering samples is better than others samples.

Field emission properties of these MWNTs have also been studied. For these MWNTs, the value of field enhancement factor β is estimated to be 3.941×10^3 . Therefore, as grown CNTs shows good field emission properties, so it can be used for device applications.

Since, the ultimate impact of SWNTs in many engineering applications depends on the precise control of their physical properties and the synthesis environment in which they grow, therefore in the distant future, SWNTs growth can be undertaken.

11. **Infrastructure created from the project:**

- a) LPCVD system installed, commissioned and working well.
- b) A Field Emission measurement has been arranged from other source.

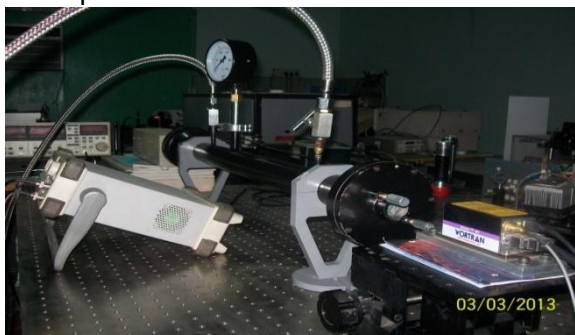
12. **Project outcomes:**

- a) Papers (Published/Communicated) in Journals: 06 Papers Internals Journal and 05 in Conferences
- b) Manpower trained (M.Tech, Ph.D.) Project: PI: 01 JRF: 01
Other than Project Staff Members: 02 JRF: 03 RA (CSIR): 01
Invited Talk delivered at different Institutions: 22
M.Tech. (Nanotechnology) Students: 35 (In 3Year)
M.Sc. (Physics: Material Science) Students: 10

Faculty of Natural Sciences Department of Physics

1. **Name of the Department:** Department of Physics
2. **Project Title:** Detection of Toxic and Explosive Traces Using Cavity Ring Down Laser Spectroscopy (CRDS)
3. **Project Investigator:** Dr. Mohd. Shahid Khan, Assistant Professor, Department of Physics.
4. **Co-Investigator:** None
5. **Funding Agency:** Directorate of Extramural Research & Intellectual Property Rights (ER&IPR), Ministry of Defense.
6. **Amount funded:** INR 14.92 Lacs.
7. **Duration of the project:** 3 Years
8. **Starting and Completion date of the Project:** December 14, 2010- December 13, 2013.
9. **Project objectives:**
 - a) To design and fabricate a long resonant cavity based gas cell to be used as CRDS cell.
 - b) To develop a set up cavity ring down spectroscopy (CRDS) experiment consisting of a long resonant cavity and to use the same for the detection of low concentrations of toxic & explosives vapours.
10. **A brief overview of the project:**

We have developed the Phase Shift- Cavity Ring Down Spectroscopy (PS-CRDS) based setup to obtain the cavity decay time employing the low cost diode laser. The PS-CRDS technique has been employed for the trace detection of NO_2 gas to observe the effect of different concentrations of NO_2 gas in the balanced mixture of argon by the laser modulation. The PS-CRDS is a variant of CRDS, in which Light from a pulsed laser is coupled into a stable, high –finesse, non-confocal, optical cavity formed by two highly reflective mirrors (reflectivity $R > 99.5\%$) separated by a distance, d . The light inside the cavity is reflected many times back and forth between the mirrors, and at each pass, a small fraction of the light exits the cavity due to the (finite) mirror transmittance. The light intensity inside the cavity decays exponentially and the same is monitored by placing a detector directly behind the cavity end mirror. The time in which the light intensity inside the cavity decreases to $1/e$ of the initial value is called the ring down time. The decay time measured with and without the sample is measured, giving the information about the sample.



11. **Infrastructure created from the project:**

Designed and developed a CRDS cell. The PS-CRDS experiment has been established and has been tested to detect ppm level of concentration of toxic gases.

12. **Project outcomes:**

- a) Research Paper entitled "Experimental study of phase-shift cavity ring-down technique for detection of NO₂ in ppm concentration" submitted to Defence Science Journal.
- b) Presented an Oral Talk on the topic "Experimental design of the phase-shift cavity ring-down technique for the measurement of decay time of the light intensity using laser diode" in the National Conference on the "Trends of applications in laser technologies and applications", TALTO-1, 2013.
- c) Poster presentation in International conference CDAMOP 2011 held at Delhi sponsored by university of Delhi and LASTEC, DRDO, Delhi on the topic 'Density Functional Theory on NO_x reservoir molecules'.
- d) Poster presentation in National Laser Symposium NLS-20, held at Chennai on the topic. Development of Cavity Ring Down Spectrometer' organized by Anna University.
- e) Poster entitled "Case Study on Cavity Ring Down Spectrometer" presented in DRS-National Seminar on Condensed Matter Physics, High Energy & Nuclear Physics held at JMI on February 3, 2012.
- f) Ms. Cherry Dhiman, Project assistant, attended Summer school at Denmark University on the Topic "Electronic Structure Theory and Material Design", during August 2012.

13. **Benefit from the project to the society:**

The PS-CRDS experiment is an alternative experiment that can be performed with low cost diode lasers for the detection of the toxic/explosive vapours.

Faculty of Natural Sciences

Department of Physics

1. **Name of the Department:** Department of Physics
2. **Project Title:** Development and Characterization of Ferroelectric thin film and ceramics for devices application
3. **PI:** Dr. Arun Singh
4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 12,00,400
7. **Duration of the Project:** 3 yr
8. **Starting date of the Project:** May 2009
9. **Project objectives:**

The major objectives of this proposal comprises are

- To fabricate modified ferroelectric films and ceramics compositions modified Lead Titanate using sol-gel derived powders and solid state mixing method (based on optimised compositions of ingredients as reported in literature).
- Development of ferroelectric thin films of doped lead titanate and lithium tantalate using sol-gel deposition, pulsed laser deposition (PLD) techniques and magnetron sputtering.
- Structural, spectroscopic and electrical (dielectric, conductivity) characterization of films and ceramics developed in (i) and (ii).
- Optimization of ceramic and thin film composition for ferroelectric, magnetoelectric properties
- Study on the ferroelectric properties of prepared samples for capacitors and sensor Applications.
- Fabrication of piezoelectric and IR transducer

10. **A brief overview:** The broad area of the present research proposal involves the work of experimental physicists. However, in true sense it involves an interdisciplinary approach to the problem. For instance, since most of the ferroelectric materials involve chemical precursors and solvents that are used in the synthesis of powder (and processing ceramics out of powder) using a chemical route such as sol-gel process it requires the expertise of a chemist. Secondly the spectroscopic analysis of powder and ceramics again involves the work of persons from chemistry background. The end use of the ferroelectric materials is in devices like sensors and actuators, hence it involves the works of the professionals from electronics background. In such a backdrop, the present research programme has an interdisciplinary relevance.

Contemporary research across the world is focussed on developing materials that are free from toxic ingredients and which are not hazardous towards the environment.

Lead based piezo-ceramics are efficient materials for use in numerous functional applications. However, due to environmental concerns and toxicity nature of lead, legislations have banned the use of lead based compounds globally. The present project aims at developing lead free piezo-crystals exhibiting functional properties comparable to lead based compounds. The research on the development of suitable material compositions for the fabrication of piezoelectric transducer and pyroelectric detectors will definitely be a boost in the direction of technology advancement.

11. **Infrastructure created from the project:**

Keithley Electrometer (I-V) to be purchased

12. **Project outcomes:**

Articles

1. Influence of thickness on optical and structural properties of BiFeO₃ thin films: PLD grown" Arun Singh, Ziaul Raza Khan, Paula Vilmanharo, Vinay Gupta, R S Katiyar, **Materials Research Bulletin**, 49 (2014) 531–536

2. Lead Zirconate Titanate Piezoelectric Ceramics with Nickel Oxide Additions" **International Refereed Journal of Engineering and Science (IRJES)** Volume 2, Issue 10 (October 2013), PP. 51-55

3. Influence of substrates temperature on Structural and optical properties of thermally evaporated CdS Nanocrystalline thin films, Mohd. Arif, Siddhartha, Ziaul Raza Khan, Vinay Gupta, Arun Singh, communicated to Indian Journal of Pure & Applied Physics (IJPAP)

Conferences

4. Highly Sensitive Nanostructured Dodecylbenzene Sulphonic Acid Doped Polyaniline based Ammonia Sensor, Jitender Kumar, Arun Singh, V. Gupta, presented in International Conference on Nanomaterials and Nanotechnology, ICNANO, New Delhi India-18-21 Dec.2011

5. Nanostructured Dodecylbenzene Sulphonic Acid Doped PANI based Ammonia Sensor", Jitender Kumar, Arun Singh, V. Gupta, presented in National Conference on Material Science, JMI, Delhi, India-Feb.2012

6. Ferroelectric and piezoelectric studies of Ni modified Lead Zirconate Titanate solid solution, Nitu Kumari, Jagdhar Mandal, **Arun Singh**, Vinay Gupta, R.S. Katiyar, presented in National Symposium on Nanotechnology: Interdisciplinary Aspects, at YMCA University of Science and technology, Faridabad, held on Dec. 12, 2012.

7. Study of structural, thermal and magnetic properties of doped barium hexaferrite, Riti Sethi, **Arun Singh**, presented in National Symposium on Nanotechnology : Interdisciplinary Aspects, at YMCA University of Science and technology, Faridabad, held on Dec. 12, 2012.

8. Optical properties of highly oriented BiFeO₃ thin films grown by PLD Method, Arun Singh, Riti Sethi, Jagdhar Mandal, P.M. Vilarinho, R. S. Katiyar, Vinay Gupta, accepted in MRS Fall Meeting 2012, Boston, USA.

13. [Benefits from the project to the society:](#)

The combined properties of memory, piezoelectricity and pyroelectricity make ferroelectric capacitors very useful, e.g. for sensor applications. Ferroelectric capacitors are used in medical ultrasound machines (the capacitors generate and then listen for the ultrasound ping used to image the internal organs of a body), high quality infrared cameras (the infrared image is projected onto a two dimensional array of ferroelectric capacitors capable of detecting temperature differences as small as millionths of a degree Celsius), fire sensors, sonar, vibration sensors, and even fuel injectors on diesel engines. As well, the electro-optic modulators that form the backbone of the Internet are made with ferroelectric materials.

14. [Any other information you may think is important in this regard:](#)

I am still suffering for my laboratory setup; I am in long waiting since Oct 2012 for the lab renovation from Jamia Building Department with no success. In the interest of the Ph. D. Students and project research work university should take initiative for required laboratory facility.

Faculty of Natural Sciences
Department of Physics

1. **Name of the Department:** Department of Physics
2. **Project Title:** A study of Multiparticle production phenomenon in ultra-relativistic nucleus- collisions
3. **PI:** Dr. Saeeduddin



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 6,31,800
7. **Duration of the project :** 3 Years
8. **Starting & completion date of the Project:** 01 May 2009 to 30 April 2012
9. **Project objectives:** To investigate the production of various hadronic species in the ultra-relativistic nucleus-nucleus collisions in the framework of the statistical thermal models. The distribution of different types of hadrons in the limited phase space for example in the rapidity and transverse momentum space.
10. **A brief overview:**

A new theoretical unified statistical thermal freeze-out model was suggested for the first time in order to explain the distribution of various hadronic species in the rapidity as well as transverse momentum space. The model incorporated the effect of nuclear transparency and varying chemical potential along the rapidity axis. The longitudinal and the transverse hydrodynamic expansion effects were incorporated simultaneously to describe the y and p_T spectra simultaneously.

The theoretical results from the proposed model describe the experimental data very well, obtained at all the RHIC energy and up to the LHC energies. In the framework of this model it is possible to obtain the rapidity and the p_T spectra simultaneously using only one set of model parameter values. The freeze-out temperatures and the transverse surface expansion velocity obtained for different types of hadrons are consistent with a sequential freeze-out scenario, where one finds that the doubly and singly strange hyperons decouple from the system earlier while the Kaons, anti-Kaons, protons and anti-protons decouple later. This seems to emerge in the framework of the thermal model due to smaller cross-sections of the doubly and triply strange hyperons with the surrounding nuclear matter.
11. **Infrastructure created from the project:** Two fast computing machines were purchased, installed and were subsequently used extensively for carrying out the model based theoretical calculations. Other computer peripherals like printers/scanners and UPS were also procured.

12 Project outcomes:

The calculations done using the acquired computing machines/infrastructures under the said project resulted in some encouraging results and good research papers which were later published in international journals as indicated below –

S. No.	Title of Paper	Name/Reference of Journal
1.	Longitudinal Hadronic Flow at RHIC in Extended Statistical Thermal Model and Resonance Decay Effects	Acta Physica Polonica B, Vol. 41 (2010), No. 11.
2.	A Unified Approach Towards Describing Rapidity and Transverse Momentum Distributions in a Thermal Freeze-out Model	Journal Of Physics G: Nuclear and Particle Physics, 39 (2012) 015012 (11pp)
3.	Transverse Momentum Distributions of Hadrons Produced in Pb-Pb Collisions at LHC Energy $\sqrt{s_{NN}} = 2.76$ TeV	Advances in High Energy Physics (In Press)

13. **Benefit from the project to the society:** These studies have thrown light on the way we look upon the structure of matter around us, since almost all the matter around us is composed entirely of quarks (hadrons) and leptons. The understanding of production of hadrons in ultra-relativistic nuclear collisions, their interaction and consequently the way these hadrons are distributed in the rapidity and transverse momentum spaces helps us to understand the evolution of the matter during the first few micro-seconds after the Big Bang, when the matter was composed of individual hadrons and leptons.

14. **Any other information you may think is important in this regard:** None

Faculty of Natural Sciences

Department of Physics

1. **Name of the Department:** Department of Physics
2. **Project Title:** In search for Modified theories of Gravity (SR/FTP/PS-104/2010), submitted under SERC Fast Track Scheme for Young Scientist in Physical / Sciences.
3. **PI:** Dr. Somasri Sen, Asst. Professor
4. **Co-PI:** Nil
5. **Funding Agency:** DST, Fast Track Scheme
6. **Amount funded:** INR. 18,72,000
7. **Duration of the Project:** 3yr
8. **Starting date of Project & date of Completion:** 15/04/2011 to 04/04/2014
9. **Project Objectives :** The objectives of the project was the following:
 - Study of Randall Sundrum brane world model generalized to six or higher dimension.
 - Constructing models of dark energy motivated from elementary particle physics.
 - Modified $f(R)$ Gravity Theories and their implications in late time Cosmology.
 - Galileon Gravity Theories and their implications in recent Cosmology. Constraining different models from different observational data
10. **A brief overview of the project:**

An important probe to understand the nature of the dark energy is the cosmic growth which tests the evolution of the inhomogeneous part of the energy density. The growth of large scale structures, derived from the linear matter density in the universe, serves as an important clue to provide significant insight into the properties of dark energy which could possibly remove degeneracies between various models. We have studied the linear growth function for large scale structures in a cosmological scenario where Generalised Chaplygin Gas (GCG) serves as dark energy candidate. We have parametrized the growth index parameter as a function of redshift and have done a comparative study between the theoretical growth rate and the proposed parametrization. We have also demonstrated that growth rates for a wide range of dark energy models can be modeled accurately by our proposed parametrization. Finally, we have compiled a data set consisting of 28 data points within redshift range (0.15, 3.8) to constrain the growth rate. It included direct growth data from various projects/surveys including the latest data from the Wiggle-Z measurements. The set also includes data constraining growth indirectly through the rms mass fluctuation inferred from Ly- α measurements at various redshifts. By fitting our proposed parametrized growth function to these data, we show that the growth in various DE models represented by GCG parametrization falls within 1σ

allowed region. Hence, with the current error bars for growth measurements, it is not possible to distinguish different dark energy models.

One of the main focus of this project is to study Randall Sundrum braneworld model generalized to six or higher dimension with different fields in the bulk. In another work we have explored the role of a bulk graviton in predicting the signature of extra dimensions through collider-based experiments in the context of a multiply warped spacetime. In particular it is shown that in a doubly warped braneworld model, the presence of the sixth dimension results in enhancement of concentration of graviton Kaluza–Klein modes compared to that obtained in the usual 5D Randall–Sundrum model. Also, the couplings of these massive graviton KK modes with the matter fields on the visible brane turn out to be appreciably larger than that in the corresponding 5D model. The significance of these results are discussed in the context of KK graviton search at the Large Hadron Collider (LHC).

Our next work is related to black holes which are amongst the most fascinating offshoots of General Theory of Relativity. One important question frequently asked about a black hole is that which informations one can extract from the exterior gravitational field of such an object. The answer is normally given in terms of a “No Hair Theorem”, which says that no information regarding a black hole can be obtained by an exterior observer except that of the mass, electric charge and the angular momentum. In the present work, it is shown that an asymptotically flat spherical black hole can have a nontrivial signature of any field for an exterior observer if the energy momentum tensor of the corresponding field is either tracefree or if the trace falls off at least as rapidly as inverse cube of the radial distance. In the absence of a general No Hair Theorem, this result can provide a characterization of the fields leading to black hole hair. The result is supported by few examples.

11. Infrastructures created from the project:

- (i) 1 Sony Vaio Notebook with intel core i5
- (ii) 1 HP Laser duplex printer (CP2025)

12. Project Outcome:

- ✧ GCG Parametrization for Growth Function and Current Constraints Gavesha Gupta, **Somasri Sen** and Anjan A Sen. JCAP, 1204, 028 (2012).
- ✧ Matter-gravity interaction in a multiply warped braneworld Biswarup Mukhopadhyaya, **Somasri Sen** and Soumitra SenGupta. J. Phys. G, 40 015004 (2013).
- ✧ Towards a characterization of fields leading to black hole hair Narayan Banerjee and **Somasri Sen** Accepted for publication in Pramana in 2014.(arXiv:1307.1520)

13. [Benefit from the project](#): These are theoretical studies in different theoretical models describing various features of the universe.

- ✧ The first work contributes to the quest of the nature of the dark energy which is now one of the hottest topics of cosmology. We have proposed a new parametrization for growth index parameter which mimics the growth history of a wide class of dark energy models quite well.
- ✧ Through study of the role of a bulk graviton in a doubly warped spacetime we had explored the possibility of predicting the signature of extra dimensions through collider-based experiments.
- ✧ In the absence of a general No Hair Theorem, our result can provide a characterization of the fields leading to black hole hair. For an asymptotically flat black hole, we have proposed a theorem to characterize the fields that could provide non-trivial information for an exterior observer.

Faculty of Natural Sciences

Department of Physics

1. **Name of the Department:** Department of Physics
2. **Project Title:** Synthesis and Characterization of Transition metal doped spinel compounds
3. **PI:** Dr. Azhar Majid Siddiqui
4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 9,80,800
7. **Duration of the Project:** 3year
8. **Starting date of the Project:** 2011-2014
9. **Project objectives:**

The project has been proposed for producing single phase crystals of spinel compounds, and their characterization.

To generate relatively simple, cost effective techniques based on solid state reaction for the synthesis of transition metal doped spinel compounds.

Different transition metals will be used to get the appropriate material which should be single phase and can be used in microwave devices. The main aim is to explore the appropriate metal and synthesis method for growing single phase spinel compounds.

To investigate the detection limit and improved sensitivity of spinel compounds, (by measuring electrical conductivity) for various dopant metals.

Fabrication of demonstrators that show these functionalities could be their uses in gems, radar, phase shifter, magnetic memory devices etc.

10. **A brief overview:**

Spinel compounds are the group of minerals that are oxides of Magnesium, Iron, Manganese or Aluminium. The term spinel is derived from spina (Latin, thorn) in reference to its pointed octahedral, crystal habit. Spinel minerals are widely distributed in the earth, in meteorites' and in rock from moon.

While the ideal spinel formula is $MgAl_2O_4$, some 30 elements, with valence from 1 to 6, are known to substitute in the A and B cation sites, having the spinel crystal structure. The name spinel minerals that have so far been recorded in nature are oxides that occur as a matrix of A^{2+} versus B^{3+} cations.

The spinel series is evolved from the classification: Spinel, Magnetite and Chromite. These are very hard, variously colored minerals, having usually octahedral crystals and occurring in igneous and carbonate rocks. Spinel is a very attractive subject for material research and engineering applications.

Aluminous spinels are highly refractory, varying from translucent to transparent and from colorless to green, blue, brown and black. The compounds $MgAl_2O_4$ and

Mg₂TiO₄ refers to the spinel structure type (space group Fd3m and Z=8). The magnesium aluminate spinel belongs to normal spinels, its formula is (Mg²⁺)[Al₂]₃[O]₄. The round and square bracket denote the tetrahedral and octahedral sites respectively, while the oxygen ions are arranged in cubic closed packed structure.

Spinel also occur as a semiprecious gem and are widely employed as mechanically robust ceramic. The compass used in ancient time was a mixture of magnetite and meghemite. Enormous interest is paid to these spinel compound materials and the modification in their properties by various means for their uses in gems, radar, phase shifter, magnetic memory devices etc.

Literature Survey

Spinel compounds are attracting the researches from long time due to their interesting and useful properties. Spinel oxides AB₂O₄ as well as the perovskite oxides ABO₃ are ranked as one of the richest groups in terms of the number of compounds and variety of physical properties. For instance, LiTi₂O₄, MgTi₂O₄, ZnV₂O₄ etc. Oxides display a variety of electromagnetic properties such as superconductivity [1], heavy fermion behavior [2–4], charge order [5], and unusual magnetic properties [6, 7].

11. Infrastructure created from the project:

12. Project outcomes:

During the preparation of the sample we found some new characteristic such as spiral like features in SEM micrographs. We have also tried to describe the conductivity in Mott's hopping variable range and thermal analysis like Thermo Gravimetric Analysis (TGA) & Differential Scanning Calorimetry (DSC) of the above mention sample first time as per best of our knowledge

We have successfully synthesized the transition metal doped (Ni, Zn) single phase spinel compounds nano-powder form. We have also tried to explore its property like structural (XRD, FTIR, RAMAN), morphological (SEM, AFM, TEM with EDX), magnetic analysis (M-T curve, M-H curve and Susceptibility), thermal analysis (TGA & DSC) and Electrical analysis (Ac & Dc conductivity at low temperature to high temperature).

13. Benefits from the project to the society:

Nano-particles of Mg_{2-x}Ti_{1-x}M₂O₄ ferrite were prepared by using citrate gel auto combustion method. The chemical reagents used in this work were Magnesium nitrate hexahydrated (Mg (NO₃)₂·6H₂O) and Nickel nitrate hexahydrated (Ni (NO₃)₂·6H₂O) as starting materials. All the chemicals were of Merck.

We use citric acid C(OH)(COOH)(CH₂-COOH)·2·H₂O (M.W = 210.14) in this method because citric acid is a weak acid and has three carboxylic and one hydroxyl group for coordinating metal ions and therefore enhances the homogeneous mixing. Citric acid helps for the homogenous distribution and segregation of the metal ions.

During water dehydration, it suppresses the precipitation of metal nitrates because it has electronegative oxygen atoms interacting with electropositive metal ions. Therefore, at a relative low temperature the precursors can form a homogenous single phase. The ammonia is used to adjust the pH for improving the complication, gel formation and also to improve the solubility of metal ions.

Faculty of Natural Sciences
Department of Chemistry

1. **Name of the Department:** Department of Chemistry
2. **Project Title:** "Synthesis, Characterization and Cytotoxic Studies of Transition Metal Complexes of Thalidomide and its Derivatives"
3. **Project Investigator:** Dr. Rahisuddin



4. **Co-Investigator:** None
5. **Funding Agency:** DST
6. **Amount funded:** INR 14,67,000.00
7. **Duration of the project:** 3 Years.
8. **Starting date of the project:**
9. **Project objectives :**
 - a) Synthesis and characterization of thalidomide derivatives.
 - b) Separation of (R)- and (S)- isomers of the synthesized thalidomide derivatives.
 - c) Synthesis and characterization of transition metal complexes of thalidomide derivatives.
 - d) Cytotoxic studies of the new thalidomide derivatives and their transition metal complexes.

10. **A brief overview of the project:**

Eight thalidomide analogues and their twenty metal complexes have been synthesized and characterized.

Ni (II) Pd(II) and Pt(II) complexes are square planar and Ru(III) complexes are octahedral.

Cytotoxicity of each compounds were studied on both HeLa and MCF-7 cell lines by MTT Assay at various concentrations (50 – 500 µg/ml).

On the basis of differences in dosing concentration, the Ni(II) and Pd(II) complexes of ligand (L^2) showed higher cytotoxic effect than Ni(II) and Pd(II) complexes of L^1 and L^3 , whereas Pt(II) complex of L^3 exhibited higher cytotoxicity than L^1 and L^2 complexes on the HeLa cell line.

The L^3 and its metal complexes showed higher cytotoxic effect against MCF-7 cell line than L^1 and L^2 and their metal against HeLa cell line.

11. **Infrastructure created from the project:**

The following Instruments were procured:

a) CO₂ Incubator, b) Laminar Flow, c) Cryogenic cylinder

12. **Project outcomes:**

Poster Presentation/Participation in symposium/conference/seminar:

S. No	Title of presentation	Topic of Seminar/ conference / workshop	Institution & Place	Date
1.	Syntheses and Characterization of Metal Ion Complexes of Thalidomide Derivative	International Conference on Chemistry Frontiers and Challenges	Department of Chemistry, A.M.U., Aligarh, India	5-6 th March, 2011.
2.	Synthesis, Characterization And Anti-Cancer Activity Of Transition Metal Complexes Imidazole	International Conference on Green Technologies for Environmental Rehabilitation (GTER)	Faculty of Engineering & Technology, Gurukul Kangri University, Haridwar, Uttarakhand, India	11-13 th February, 2012.
3.	Synthesis and characterization of Transition Metal Complexes of 4,5,6,7-Tetrachloro-2-(pyridine-2-yl)isoindoline-1,3-dione	National Conference on New Vistas in Chemistry	Department of Chemistry, A.M.U., Aligarh, India	2-3 rd March., 2012

Invited Lecture in conference/ seminar.

S. No.	Title of Lecture	Title of Conference / Seminar	Organized by	Date
1.	Synthesis, Characterization and Anti-cancer Activity of Ni(II) and Pt(II) Complexes of Ligand derived from 2-Methyl imidazole	3rd National Seminar on Recent Trends in Advancement of Mathematical and Physical Sciences	D.N. College, Meerut, UP.	17-18 th March, 2012

Faculty of Natural Sciences Department of Chemistry

1. **Name of Department:** Department of Chemistry, Jamia Millia Islamia.
2. **Project Title:** Microemulsion synthesis of Metal (mainly Au and Ag) Nanoparticles and their nano-sized oxides.
3. **Project Investigator:** Dr. Tokeer Ahmad



4. **Co-Investigator:** None
5. **Funding Agency:** Department of Science and Technology (DST).
6. **Amount funded:** INR 19.68 Lakhs
7. **Duration of the project:** 3 Years
8. **Starting date of the Project:** May 23, 2007 to March 31, 2010.
9. **Project objectives:**

The following three objectives were proposed in this project.

 - a) Optimize and simplify the reverse micellar method avoiding the use of highly expensive chemicals.
 - b) Design the reverse micelles of different sizes to synthesize the metal nanoparticles of different sizes. This is of significance to yield high - purity ultrafine powders of metals and metal oxides with controlled morphology and size of the particles.
 - c) To characterize and study the size-dependent optical properties.

10. **A brief overview of the project:**

The basic aim of the project was to design the reverse micelles of different sizes to synthesize the nanoparticles of gold and silver and their metal oxides in different sizes and to explore their size dependent properties. The project was mainly to fund the purchase of minor equipment, contingency, travel and consumables related to the scheme. Nanoparticles and nanostructured materials are among the most challenging areas of current scientific and technological research. Nanoparticles have technological applications in areas such as catalysts, materials processing, and high performance ceramics. Nanosized particles of noble metals hold promise for use as advanced materials with novel electronic, optical and thermal properties as well as catalytic properties due to their potential applications in the fields of physics, chemistry, biology, medicine, material science and their different interdisciplinary fields. Numerous processes are being developed aiming at the synthesis of nanoparticles of a variety of materials. The surfactant-mediated route using reverse micelles is of special importance since it provides homogeneous and mono-disperse nano-particles without the need of specialized or expensive equipment. The reverse-

micelles obtained at a particular ratio of the aqueous phase to the surfactant leads to uniform-size nano-reactors and have an aqueous core in which it is possible to precipitate the inorganic material. In most cases a precipitating agent is allowed to react with the metal ion, and the resulting precipitate yields the nanomaterial of choice upon thermal treatment.

11. Infrastructure created from the project:

The following equipments have been installed from the project:

- a) BET Surface area analyser, Model: Nova 2000e procured from Quanta Chrome Instruments USA.
- b) UV-Visible Spectrophotometer, Model: Lambda-25 procured from Ocean Optics, USA.
- c) High Temperature (1200°C) Programmable Furnace, Model: MT-11 procured from Metrex Scientific Instruments Pvt. Ltd.
- d) Hydraulic Press (15 Ton), with 13mm KBr die & 8 mm die set; procured from Prama Instrument Pvt. Ltd.
- e) Remi revolutionary High speed centrifuge machine, Model: R 24 procured from Remi Sales & Engineering Ltd.
- f) High pressure seamless Nitrogen, Hydrogen, Oxygen, Argon filled gas cylinders of 47 lit. Water capacity with gauges procured from Sigma Gases & services.
- g) Liquid nitrogen container of 11 litre capacity with six canisters, Model BA-11, IBP make procured from Sigma Gases & services.
- h) Freeze (180 Lit), Whirlpool.
- i) Magnetic Stirrer (4 Nos.), Remi Make procured from Remi Sales & Engineering Ltd.
- j) Computer; HP DX 2280 Desktop with 17" CRT monitor, HP scanjet scanner G 3010, Printer Samsung ML 2010 and UPS (500 VA)

12. Project outcomes:

S. No.	Items	Number
1.	Peer reviewed research papers	08
2.	Books	01
3.	Conference presentation	07
4.	Invited lecture delivered	11

Research papers from the project: 8

- a) Silver Nanoparticles: Large Scale Solvothermal Synthesis and Optical Properties, Irshad A. Wani, Sarvari Khatoon, Aparna Ganguly, Jahangeer Ahmed, Ashok K. Ganguli and Tokeer Ahmad, Mater. Res. Bull. 45, 1033-1038, 2010. {IF = 2.145}
- b) Silver Nanoparticles: Ultrasonic Wave Assisted Synthesis, Optical Characterization and Surface Area Studies, Irshad A. Wani, Aparna Ganguly, Jahangeer Ahmed, and Tokeer Ahmad, Mater. Lett. 65(3), 520-522, 2011. {IF = 2.307}
- c) Antifungal Activity of Gold Nanoparticles Prepared by Solvothermal Method, Tokeer Ahmad, Irshad A. Wani, Irfan H. Lone, Aparna Ganguly, Nikhat Manzoor, Aijaz Ahmad, Jahangeer Ahmed and Ayed S. Al-Shihri, Mater. Res. Bull. 48, 12-20, 2013. {IF = 2.145}

- d) Size and Shape dependant Antifungal Activity of Gold Nanoparticles: A Case Study of Candida, Irshad A. Wani and Tokeer Ahmad, Colloid Surf. B 101, 162-170, 2013. {IF = 3.456}
- e) Structural Characterization and Antimicrobial Properties of Silver Nanoparticles Prepared by Inverse Microemulsion Method, Irshad A. Wani, Sarvari Khatoon, Aparna Ganguly, Jahangeer Ahmed and Tokeer Ahmad, Colloid Surf. B 101, 243–250, 2013. {IF = 3.456}
- f) Biosynthesis, Structural Characterization and Antimicrobial Activity of Gold and Silver Nanoparticles, Tokeer Ahmad, Irshad A. Wani, Nikhat Manzoor, Jahangeer Ahmed and Abdullah M. Asiri, Colloid Surf. B 107, 227-234, 2013. {IF = 3.456}
- g) Effect of Gold Ion Concentration on Size and Properties of Gold Nanoparticles in TritonX-100 based Inverse Microemulsions, Tokeer Ahmad, Irshad A. Wani, Jahangeer Ahmad and Omar A. Al-Hartomy, Applied Nanoscience, DOI 10.1007/s13204-013-0224-y (In Press) 2013.
- h) Antifungal Activity of Gold Nanoparticles with Fluconazole against Candida Isolates in Inverse Microemulsions, Tokeer Ahmad, Irshad A. Wani, Nikhat Manzoor, Jahangeer Ahmed, Abul Kalam and Ayed S. Al-Shihri, RSC Advances, (under review) 2014.

Books: 1

Principles of Nanoscience and Nanotechnology, Author(s): M. A. Shah, Tokeer Ahmad

ISBN: 978-81-8487-072-5, Publication Year: 2010, Pages: 220

Research papers presented in conferences: 7

S. No	Name of the conference	Title of the paper	Authors	Dates	Venue
1.	6 th National Symposium and Conference on “Solid State Chemistry and Allied Areas”	Solvothermal Synthesis, Characterization and Properties of Silver Nanoparticles	<u>Irshad A. Wani</u> and Tokeer Ahmad*	Nov 19-21, 2009	VIT university, Vellore, Tamil Nadu, India.
2.	Recent Advances in Chemistry (RAC-2010)	Chemical synthesis of silver nanoparticles	<u>Irshad A. Wani</u> and Tokeer Ahmad*	March 10, 2010	Department of Chemistry, Jamia Millia Islamia, New Delhi, India.
3.	International Interdisciplinary Science Conference (I-ISC 2010) on “Nanobiotechnology: Interface between Physics and Biology”	Large Scale Solvothermal Synthesis of Silver Nanoparticles	<u>Irshad A. Wani</u> and Tokeer Ahmad*	Dec 2-4, 2010	CIRBSC, Jamia Millia Islamia, New Delhi.
4.	2011 NSTI World Conference and Trade Show	Controlling the Size and Morphology of Silver Nanoparticles:	Tokeer Ahmad*	May 13-16, 2011	Boston, USA

		Role of Chemical Routes			
5.	7 th National Symposium and Conference on Solid State Chemistry and Allied Areas (ISCAS-2011)	Controlling the Size and Morphology of Silver Nanoparticles: Role of Chemical Routes	<u>Irshad A. Wani</u> and Tokeer Ahmad*	Nov 24-26, 2011	Jamia Millia Islamia, New Delhi, India.
6.	7 th National Symposium and Conference on Solid State Chemistry and Allied Areas (ISCAS-2011)	Ultrasonic Wave Assisted Synthesis of Gold Nanoparticles: Effect of the Reductants on the Particle Size, Morphology; Surface Area and Optical Studies	<u>Irshad A. Wani</u> and Tokeer Ahmad*	Nov 24-26, 2011	Jamia Millia Islamia, New Delhi, India.
7.	"8 th National Conference on Solid State Chemistry and Allied Areas" (ISCAS-2013)	Gold Nanoparticles: Microemulsion Synthesis and the Study of Their Synergistic Antifungal Activity with Fluconazole against Candida	<u>Irshad A. Wani</u> and Tokeer Ahmad*	Feb 15-17, 2013	Department of Chemistry, Dr. H. S. Gour Central University, Sagar, M.P.

Invited Lecture Delivered from outcome of the project: 11

S. No.	Invited Lecture Title	Dates	Venue
1.	Chemical Synthesis of Nanomaterials	April 14, 2009	Centre of Research Excellence in Nanotechnology and Department of Chemistry, King Fahad University of Petroleum and Minerals (KFUPM), Dehran, Saudi Arabia
2.	Synthesis Aspects of Nanostructured Materials	May 11, 2009	Department of Chemistry & Bio-Chemistry, Rowan University, Glassboro, New Jersey, USA
3.	Nano-Materials: An Art of Synthesis	June 29, 2009	59 th Meeting of Nobel Laureates and Students at Lindau, Germany during India Evening
4.	Chemical Synthesis of Silver Nanoparticles	November 21, 2009	6 th National Symposium and Conference of the Indian Association of Solid State Chemists and Allied Scientists at VIT University, Vellore
5.	NANO: An Evolution of Science	December 13, 2009	Nanotechnology: A Futuristic Application in all Disciplines of Science organized by

			St. Aloysius College Jabalpur
6.	Some Results of Silver and Gold Nanoparticles	December 13, 2009	Nanotechnology: A Futuristic Application in all Disciplines of Science organized by St. Aloysius College Jabalpur
7.	Chemical Route to Nanotechnology	February 27, 2010	Symposium-cum-Workshop on Nanotechnology Organized by Nanotechnology Research Centre, DAVIET, Jalandhar.
8.	Chemical Synthesis of Gold and Silver Nanoparticles	March 23, 2010	Fourth Saudi Science Conference, Al-Madinah Al-Munawwarah, Kingdom of Saudi Arabia.
9.	Scale and Controlled Synthesis of Nano-Structured Materials	January 15, 2011	First National Conference on "Recent Advances in Polymer Nanocomposites", Zakir Hussain College, Delhi University
10.	Chemistry of Nano-Structured Materials	April 01, 2011	Centre for Interdisciplinary Research in Basic Sciences (CIRBS), Jamia Millia Islamia.
11.	Chemical Processing of Nano-Materials	June 22, 2011	Department of Chemistry, Michigan State University, East Lansing, USA

13. Benefit from the project to the society:

The synthesis of Silver and Gold nanoparticles at large scale may be the interest of electronic industry as the yield of nanoparticles is the major problem of any industry. These metal (gold and silver) nanoparticles may also be used for Bio-medical research for binding with proteins or other bio stuffs.

14. Any other information you may think is important in this regard:

The following new observations were seen in the project.

- Highly uniform and monodispersed silver nanoparticles using reverse micelles, Solvothermal and sonochemical methods.
- We have prepared the silver nanoparticles at large scale with maximum surface area (34.53 m²/g) for the first time.
- Effect of reducing agents on the particle size and morphology under ultrasonic waves and precise control of size (3 nm to 12 nm) and morphology by the systematic variation of reductant and reaction condition using sonochemical method.
- Control of size (8 nm to 40 nm) and morphology (spheres, cubes and discs) of silver nanoparticles by the systematic variation of surfactants.
- Biological synthesis of monodisperse silver and gold nanoparticles capped with enzymes.

Faculty of Natural Sciences Department of Chemistry

1. **Name of Department:** Department of Chemistry.
2. **Project Title:** Polymeric Citrate Precursor Synthesis of Nanocrystalline $\text{Ba}_{1-x}(\text{Pb,Sr})_x\text{ZrO}_3$: Structural Characterization and Dielectric Properties.
3. **Project Investigator:** Dr. Tokeer Ahmad, Department of Chemistry.



4. **Co-Investigator:** Dr. Omar A. Alhartomy, University of Tabuk, Saudi Arabia.
5. **Funding Agency:** University of Tabuk, Kingdom of Saudi Arabia, under International Collaborative Research Programme.
6. **Amount funded:** INR 75 Lakhs.
7. **Duration of the project:** 2 Years.
8. **Starting date of the Project:** August 09, 2010 to August 08, 2012.
9. **Project objectives:** The following four objectives were proposed in this project.
 - a) Polymeric citrate precursor synthesis of nanocrystalline $\text{Ba}_{1-x}\text{Pb}_x\text{ZrO}_3$ at $x = 0, 0.25, 0.50, 0.75, 1.0$ for the applications in electronic devices.
 - b) These dielectric oxide nanoparticles will be characterized by X-ray diffractometer (XRD), Thermal Analyzer (TGA/DTA), Transmission Electron Microscopy (TEM), Dynamic Light Scattering (DLS) Studies, Surface area and Pore size distribution using BET Surface area analyzer.
 - c) To study their dielectric properties for the applications in electronic devices.
 - d) To measure the density of the compacted nanoparticles for better applications in layered ceramic capacitors.
10. **A brief overview/write up of the project:**

Nanocrystalline zirconates of metals (barium, lead and strontium) and the entire solid solution $\text{Ba}_{1-x}(\text{Pb,Sr})_x\text{ZrO}_3$ ($0 \leq x \leq 1$) have been synthesized using the designed Polymeric Citrate Precursor Reaction Set up. The use of metal alkoxides has been avoided during the reactions, since they are highly expensive. The reaction set up was designed in such a way as to completely avoid any capping agent or surfactant. Powder X-ray diffraction technique was used to check the progress of the reaction, purity, phase identification and the nature of the products. The particle size and morphological studies have been carried out by extensive X-ray line broadening studies and transmission electron microscopic studies with intermittent grinding and process temperature. The surface area, porosity, pore size and pore volume distribution were estimated by BET surface area analyzer. The dielectric properties including dielectric constant and dielectric loss of the solid solution of $\text{Ba}_{1-x}(\text{Pb,Sr})_x\text{ZrO}_3$ ($0 \leq x \leq 1$) were performed by the LCR impedance analyzer.
11. **Infrastructure created from the project:**

High Frequency HF LCR Meter (20Hz - 5MHz) with Suitable Furnace, PID Temperature Controller & Solid Sample holder procured from Wayne Kerr Electronics Pvt Ltd. has been installed from the project

12. Project outcomes:

S. No.	Items	Number
1.	Peer reviewed research papers	03
2.	Conference presentation	05
3.	Invited lecture delivered	09

Research papers from the project: 3

- Synthesis, Characterization and Dielectric Properties of Nanocrystalline $\text{Ba}_{1-x}\text{Pb}_x\text{ZrO}_3$ ($0 \leq x \leq 0.75$) by Polymeric Citrate Precursor Route, Omar A. Al-Hartomy, Mohd Ubaidullah, Sarvari Khatoon, Jamal H. Madani and **Tokeer Ahmad**, J. Mater. Res. 27, 2479-2488, 2012. {IF = 2.354}
- Dielectric properties of $\text{Ba}_{1-x}\text{Sr}_x\text{ZrO}_3$ ($0 \leq x \leq 1$) Nanoceramics developed by citrate precursor route, Omar A. Al-Hartomy, Mohd Ubaidullah, Dinesh Kumar, Jamal H. Madani and Tokeer Ahmad, J. Mater. Res. 28, 1070-1077, 2013. {IF = 2.354}
- Synthesis, characterization and dielectric properties of Pb-doped BaZrO_3 using metal salts in solid form ($x=0, 0.25, 0.50$, and 0.75) by precursor method, Omar A. Al-Hartomy, Mohd. Ubaidullah, Irfan H Lone and **Tokeer Ahmad**, (submitted) 2014.

Research papers presented in conferences: 5

S. No	Name of the conference	Title of the paper	Authors	Dates	Venue
1.	7 th National Symposium and Conference on Solid State Chemistry and Allied Areas (ISCAS-2011)	Citrate precursor synthesis and dielectric properties of nanocrystalline $\text{Ba}_{1-x}\text{Pb}_x\text{ZrO}_3$ ($0 \leq x \leq 0.75$)	Mohd Ubaidullah, Omar A. Al-Hartomy and Tokeer Ahmad*	Nov 24-26, 2011	Jamia Millia Islamia, New Delhi, India.
2.	Recent Advances in Chemistry (RAC-2012)	Polymeric citrate precursor synthesis and properties of nano-sized $\text{Ba}_{1-x}\text{Pb}_x\text{ZrO}_3$	Mohd Ubaidullah, Omar A. Al-Hartomy and Tokeer Ahmad*	March, 12, 2012	Jamia Millia Islamia, New Delhi, India.
3.	DAE-BRNS 4 th Interdisciplinary Symposium on Materials Chemistry (ISMC-2012)	Citrate Precursor Synthesis, Characterization and Dielectric Properties of $\text{Ba}_{1-x}\text{Sr}_x\text{ZrO}_3$ ($0 \leq x \leq 1$)	Mohd Ubaidullah, Omar A. Al-Hartomy and Tokeer Ahmad*	Dec 11-15, 2012	Chemistry Division, Bhabha Atomic Research Centre (BARC), Mumbai

4.	"8 th National Conference on Solid State Chemistry and Allied Areas" (ISCAS-2013)	Synthesis, characterization and dielectric properties of Pb-doped BaZrO ₃ via polymeric citrate precursor route by using metal salts in solid form	<u>Mohd Ubaidullah</u> and Tokeer Ahmad*	Feb 15-17, 2013	Department of Chemistry, Dr. H. S. Gour Central University, Sagar, M.P.
5.	38th International Conference and Exposition on Advanced Ceramics and Composites.	Nano ceramic Ba _{1-x} Sr _x ZrO ₃ (0 ≤ x ≤ 1) developed by Citrate Precursor route, Structural Characterization and Dielectric properties	<u>Mohd Ubaidullah</u> and Tokeer Ahmad*	January 26-31, 2014	The American Ceramic Society, Hilton, Daytona Beach, Florida USA

Invited Lecture Delivered from outcome of the project: 9

S. No.	Invited Lecture Title	Dates	Venue
1.	Nano: How Small and How Big	March 15, 2012	Department of Applied Chemistry, AMU Aligarh
2.	Nanoscience & Nanotechnology: An Overview	March 27, 2012	DST Inspire Lecture at AERP Institute of Technology & Management, Hodal, Haryana
3.	Solid State Chemistry & Applications	March 27, 2012	DST Inspire Lecture at AERP Institute of Technology & Management, Hodal, Haryana
4.	Synthesis of Nanomaterials	June 10, 2012	National Workshop on Nanoscience and Materials Characterization, organized by Indian Association of Solid State Chemists and Allied Scientists (ISCAS), Jammu.
5.	Characterization of Nanomaterials	June 11, 2012	National Workshop on Nanoscience and Materials Characterization, organized by Indian Association of Solid State Chemists and Allied Scientists (ISCAS), Jammu.
6.	Nanomaterials: Small Dimension & Big Applications	June 16, 2012	Department of Chemistry, Kashmir University, Kashmir
7.	Designing of Simple to Complex Nanomaterials	August 23, 2013	International Conference on Multifunctional Materials, Energy and Environment organized by Sharda University, Greater Noida.
8.	Polymeric Precursor Route to Nanomaterials	September 22, 2013	National Workshop on Advances in Polymeric Materials Organized by

			Department of Applied Chemistry Aligarh Muslim University, Aligarh
9.	Fundamentals of Nanotechnology	January 08, 2014	DST Inspire Lecture at Institute of Applied Medicine and Research, Duhai, Ghaziabad, U.P.

13. [Benefit from the project to the society:](#)

The synthesized dielectric oxide nanoparticles may be the interest of electronic industry.

Faculty of Natural Sciences
Department of Chemistry

1. **Name of the Department:** Department of Chemistry.
2. **Project Title:** Development of Self-assembled nanostructured poly (orthotoluidine) and poly (N-vinylcarbazole) intercalated silicate (bentonite) nanocomposites using benign techniques.
3. **Project Investigator:** Dr.Ufana Riaz
4. **Co-Investigator:** None
5. **Funding Agency:** DST-SERC Fast Track project for Young Scientists.
6. **Amount funded:** INR18,82,000/-
7. **Duration of project:** 3 Years
8. **Stating date of the project:** February 1, 2009 - July 31, 2012.
9. **Project Objectives:**

The objective of the present work were focused on the application of benign/facile techniques to develop self-assembled conducting polymer[poly(carbazole),poly(o-toluidine)]/silicate(bentonite) nanocomposites of desired morphology (nanospheres, nanorods, nanowires) by:

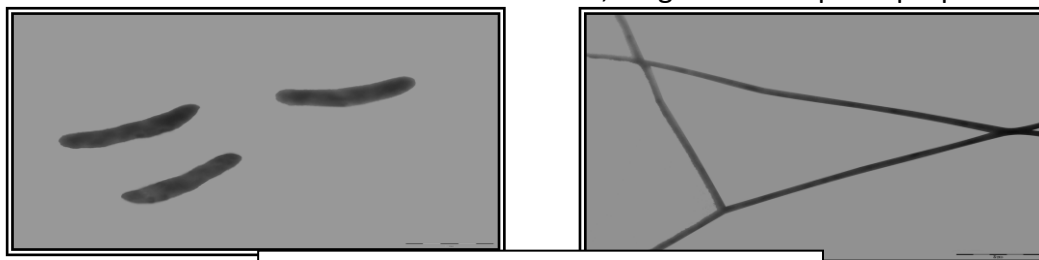
a) MICROWAVE SYNTHESIS

B) ENZYMATIC SYNTHESIS

And to understand the role of eco-friendly processing conditions on the formulation of conducting polymer /silicate nanocomposites.

10. **A brief overview of project :**

We explored a new route of solid state intercalation for the production of self-assembled polymer/clay nanocomposites which has not been reported till date. Moreover the results obtained during this period were found to be commendable in terms of novelty and the utilization of eco-friendly routes which was the target of our research proposal. Bentonite/conducting polymer nanocomposites present a broad range of useful properties, from controlled morphology to high crystallinity .The combination of these unique properties offers many opportunities for research that can produce novel materials with unusual electrical, magnetic and optical properties.



TEM IMAGES of controlled morphology

11. **Infrastructure created from project:**

Centrifuge Machine Deep freezer, Laboratory grade microwave oven and UV-visible spectrophotometer were purchased under the said project.

12. **Project outcomes :**

S.NO	AUTHORS	TITLE OF PAPER	JOURNAL	YEAR
1.	Ufana Riaz, S.M. Ashraf, Sanjeev Kumar, Imran Ahmad	"Controlling the growth of polycarbazole within the silicate galleries using peroxides via microwave-assisted green synthesis"	Chemical Engineering Journal, 241(1), 259-267	2014
2.	Ufana Riaz, S.M. Ashra,	"Microwave-Assisted Solid State in Situ Polymerization and Intercalation of Poly(carbazole) between Bentonite Layers: Effect of Microwave Irradiation and Gallery Confinement on the Spectral, Fluorescent, and Morphological Properties"	Journal of Physical Chemistry C, 116 (22), 12366–12374,	2012
3.	Ufana Riaz, S.M. Ashraf , H.O. Sharma	"Mechanical, morphological and biodegradation studies of microwave processed nanostructured blends of some bio-based oil epoxies with poly (vinyl alcohol)"	Polymer Degradation and Stability, 96 (1) 33-42,	2011
4.	Ufana Riaz, S.M. Ashraf	"Effect of surfactants on microwave-assisted solid-state intercalation of poly(carbazole) in Bentonite",	Journal of Nanoparticle Research, 13(12),6321-6331,	2011
5.	Ufana Riaz, S.M. Ashra	"Effect of solid state intercalation conditions in controlling the self-assembled nanostructured polycarbazole–montmorillonite nanocomposites synthesized by mechano-chemical and microwave-assisted techniques"	Applied Clay Science,52(1-2),179-183,	2011
6.	Ufana Riaz and Sharif Ahmad	"Rapid intercalation of sustainable resource based linseed oil fatty amide- a Polymer precursor in Cloisite® 93A by microwave-assisted method"	Journal of Applied Polymer Science 121(4), 2317–2323,	2011

7.	Sharif Ahmad, Nijas PK and Ufana Riaz	"Effect of Microwave Processing on the Spectral, Mechanical, Thermal, and Morphological Characteristics of Sustainable Resource Based Castor Oil"	Advance in Polymers Technologies,30 (2), 96–109,	2011
8.	Ufana Riaz, Syed Aziz Ahmad, Sharif Ahmad and S.M.Ashraf	A Comparative Study on Camphorsulphonic Acid Modified Montmorillonite Clay Based Conducting Polymer Nanocomposites	Polymer Composites,31 (5),906-912	2009

(B) Papers published in Conference Proceedings, Popular Journals etc

S .NO	AUTHOR(S)	TITLE OF PAPER	CONFERENCE THEME	YEAR
1.	Ufana Riaz and Mohd.Zeesha n	" Microwave-Assisted Solid State Intercalation of Polycarbazole in Rhodamine-B modified Bentonite Clay Galleries"	APA International Congress on Advances in Human Healthcare Systems, February 20-23, 2012, India Habitat centre organized by .IIT Delhi and Jamia Hamdard.	2012
2.	Ufana Riaz	Comparative studies on the effect of microwave-assisted solid-state intercalation of polycarbazole and poly (o-toluidine) into Bentonite clay galleries	International conference on Nanomaterials & Nanotechnology (ICNANO), held on 18-21 December, 2011 at the Conference Centre, University of Delhi, Delhi, India	2011
3.	Ufana Riaz and Nisha Khan	Comparison of mechano-chemical and microwave-assisted techniques in controlling the self-assembled nanostructure of polycarbazole–montmorillonite nanocomposites synthesized by solid state intercalation	International Conference on Chemistry: Frontiers and Challenges" CENTENARY CELEBRATIONS organized by Department of Chemistry ,Aligarh Muslim University (A.M.U.),Aligarh -202002	2011

4.	Ufana Riaz and Nisha Khan	Role of Microwave – assisted solid state intercalation in controlling the self-assembled growth of nanostructured polycarbazole within Bentonite Clay Galleries	Workshop on Nanoscience and Nanotechnology, Sponsored by UGC, organized by Department of Applied Physics Z.H. College of Engg. & Tech. Aligarh Muslim University (A.M.U.), Aligarh - 202002	2011
5.	Ufana Riaz and Nisha Khan	Microwave –assisted in-situ polymerization of nanostructured Carbazole into Bentonite clay galleries	FIRST NATIONAL CONFERENCE ON “RECENT ADVANCES IN POLYMER NANOCOMPOSITES” Organized by Dept of Physics, Zakir Hussain College, University of Delhi	2011
6.	Ufana Riaz and Nisha Khan	Effect of surfactant on self-assembled growth of microwave-assisted solid state intercalated poly(carbazole) in bentonite	Professor Ram Chand Paul International Conference on “Emerging trends in Chemistry” organized by the Department of Chemistry, Panjab University, Chandigarh	2011

(C) Contribution in Books

- a) “Nanostructured conducting polymers and their nanocomposites: classification , properties , fabrication and their application” by Ufana Riaz (author) and S.M.Ashraf (co-author) published by Nova Publishers ISBN: 978-1-60876-943-8
 - b) “Nanostructured Conducting Polymers and their Nanocomposites: Classification, Properties, Fabrication and Applications” pp. 1-131 Chapter in edited Book “Advances in Nanotechnology, Volume 2” by Zacharie Bartul and Jérôme Trenor published by Nova Publishers ISBN: 978-1-60876-199-9
13. **Benefit to society:** These nanocomposites hold immense potential for their biological application as anticancer agents.

Faculty of Natural Sciences

Department of Chemistry

1. **Name of the Department:** Department of Chemistry, Jamia Millia Islamia.
2. **Project Title:** Study of Amino Acid-Surfactant/Carbohydrate Interaction in Aqueous Medium.
3. **Project Investigator:** Prof. Anwar Ali.
4. **Co- Investigator:** None.
5. **Funding Agency:** University Grants Commission.
6. **Amount Funded:** INR 5, 85,871/-
7. **Duration of the Project:** (3+1) years.
8. **Starting and completion date of the Project:** April 01, 2008 to March 31, 2012.
9. **Project objectives:**

The proposed research work was devoted to the study of the interactions of amino acids and peptides with surfactants and carbohydrates in aqueous medium. Surfactants may interact with proteins in aqueous medium, resulting in configurational changes in proteins. These changes often result in changes of polarity and stability of the proteins. Also many investigators have shown that sugar and polyhydric alcohols increase the thermal stability of proteins or reduce the extent of their denaturation by other agents. But, our understanding of mechanism of stability of proteins by these additives is still incomplete. Because of the complex behaviour of proteins in various solvents / cosolutes, it is convenient to study the model compounds, namely, amino acids, peptides, and their derivatives in solution. Moreover, thermodynamic studies of the interactions of amino acids with surfactants and carbohydrates in aqueous medium are rare. These considerations led us to undertake the present investigation.

10. **A brief overview of the project:**

It is well known that thermodynamic behaviour and the state of solvation of proteins and peptides in solutions rely heavily on the interactions of water with various functional groups of the proteins. However, biological fluids are not pure water as they contain many organic and inorganic salts. These cosolutes/ cosolvents affect proteins in different ways, acting as effective probes of their conformations in solutions¹ Investigations of these conformational changes provide valuable information on the role of solvent/ cosolutes/ cosolvent in maintaining the native, intermediate, and denatured states of the proteins.

Surfactants may interact with the proteins directly by competing for oil – water or air – water interfaces and by binding to them, thereby, inducing substantial changes in the protein conformation² , thus, leading to alternation in functional characteristic of proteins. However, details of surfactant – protein interactions are yet to be investigated. Further, it has been reported that polyhydroxy compounds, such as sugars, increase the thermal stability of globular proteins or reduce the extent of denaturation by other reagents³. The stabilizing effect of sugars was correlated with the number and position of hydroxyl groups by some investigators. However, the stabilizing mechanism of proteins is still incompletely understood. Therefore it would be important to understand the origin and nature of proteins – surfactant/ carbohydrate interactions in aqueous medium. As the complex conformational factors affect the structure of protein in various solutions,

the directly study of proteins – surfactant/ carbohydrate interaction is very difficult. However, amino acids, which are building blocks of the proteins, are considered suitable for such studies. Investigations of the physicochemical properties such as volumetric, viscometric, ultrasonic, and refractive index of the model compounds (amino acids) in aqueous surfactant/ carbohydrate solutions can provide valuable informations that ultimately lead to a better understanding of the behaviour of biological macromolecules⁴ (proteins) in such media.

11. Infrastructure created from the project:

The following items were purchased from the project:

- a) One bookshelf, b) One file cabinet, c) One computer table, d) A room / cubical for research purpose, e) Two A.Cs, f) Reference books.

12. Project outcomes:

A. Research papers: The following research papers were published out of this project:

- a) Physicochemical behaviour of some amino acids / glycylglycine in aqueous D – galactose solutions at different temperatures , A. Ali, R. Patel, Shahjahan, and N.H.Ansari, *International Journal of Thermophysics*, Springer, 31, 572 – 584 (2010).
- b) Volumetric, Viscometric, and Ultrasonic properties of liquid mixtures of cyclohexane with alkanols at different temperatures, A. Ali, S. Tasneem, F. Nabi, Z. *Naturforsch. A*, Germany, 65a, 749 – 760 (2010).
- c) Interaction of some amino acids with sodium dodecyl sulphate in aqueous solution at different temperatures, A. Ali, F.A.Itoo , and N.H. Ansari, Z. *Naturforsch. A*, Germany, 66a, 345 – 352 (2011).
- d) Critical micelle concentration and self – aggregation of hexadecyl – trimethylammonium bromide in aqueous glycine and diglycine at different temperatures, A.Ali, S.Tasneem, P.Bidhuri, and N.A.Malik, *Russian Journal of physical chemistry A*, 86, 1923 – 1929 (2012).

B. Ph.D. degree awarded out of this project:

Ph.D. degree was awarded to the Project Fellow Ms. Shadma Tasneem on the topic: Thermodynamic and transport studies of some organic binary liquid mixtures and mixtures of amino acids in aqueous surfactants / carbohydrates in the year 2011.

13. Benefit from the project to the society:

The knowledge gained from the studies of amino acids / peptides – surfactant / carbohydrate interactions may be utilized in the biotechnological industry for the development and design of new separation and purification processes of biomolecules. Thermodynamic methods have not been widely used in biotechnological industry as is the case in chemical industry, but it is becoming more important because of the increasing demand for computer aided design and optimization of processes. Also, such studies find applications in immunology, biosynthesis, pharmacology, and medicine. This is possible as we often interact with people associated with biotechnology and chemical industries, etc., in seminars / conferences. Our findings may be of great significance to these industries. Further, the data obtained by us will supplement the data obtained by other workers in the area of solution chemistry at national and international levels.

Faculty of Natural Sciences
Department of Chemistry

1. **Name of the Department:** Department of Chemistry.
2. **Project Title:** Monitoring of Arsenic in ground water of Ballia District Uttar Pradesh using Remote Sensing and GIS Techniques.
3. **Project Investigator:** Prof. Imran Ali



4. **Co-Investigator:** Prof. Tabrez Alam Khan, Department of Chemistry and



Dr. Atiqur Rahman Department of Geography.



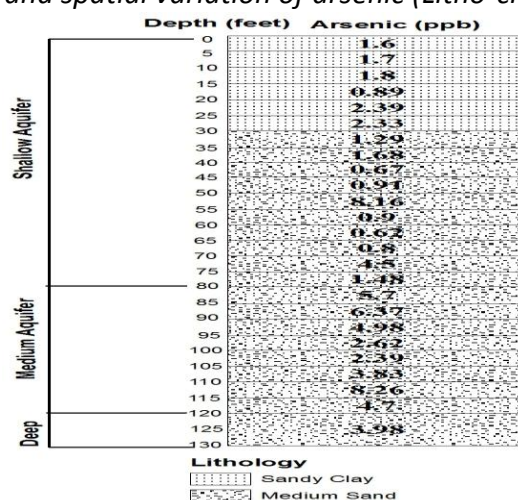
5. **Funding Agency:** Ministry of Environment and Forests.
6. **Amount funded:** INR 27, 90,178/- (Revised)
7. **Duration of the project:** 3.5 Years
8. **Starting and completion date of the project:** January 27, 2010- July 26, 2013.
9. **Project objectives:**
The objectives of this project are as follows:
 - a) To study of arsenic (distribution and transport); involving mechanisms of arsenic contamination and movement; in ground water of Uttar Pradesh.
 - b) To simulate laboratory conditions; to understand arsenic chemistry and mitigation in ground water.
 - c) To assess the affect of various anthropogenic factors and changing land use pattern on arsenic movement in Ballia.
 - d) To use GIS to prepare map for area of high arsenic concentration and low arsenic concentration as observed from the water tested in the laboratory to plot on the map as points corresponding to each *block* of district.

- e) To develop an integrated database system using GIS tool for information decision-making process.
- f) To suggest the effective measures to control the spreading of arsenic in ground water.

10. **A brief overview of the project:**

This study investigated the relationship between near-surface lithology and the spatial variability of arsenic concentrations using sediment grain-size analysis and digestion process. It has been observed that the distribution of arsenic in different strata at all 3 places was random. This was due to fact that the strata might be by the formation of sedimentation from Himalaya's rocks. The different concentration of arsenic in these strata is because of the different type of sediment setting during rainy season within millions of years. The different concentration of arsenic in these sediments is attributed due to different metrological conditions during sedimentation. It was concluded that arsenic contents are present at each depth of the soil. But high concentration of arsenic is in shallow aquifers due to the leaching of arsenic from sediments after interaction with oxygen. The oxygen in shallow aquifer is present because of excessive withdrawal of water. Briefly, there are chances that water-table may go down and oxygen reach to medium and deep aquifers leading to dissolution of arsenic from sediments into these aquifers.

Near surface lithology and spatial variation of arsenic (Litho-chemical analysis)



11. **Infrastructure created from the project:**

One UV-visible spectrophotometer was purchased from this project for the analysis of ground water samples of Ballia District containing arsenic. Besides, false ceiling in the laboratory was also completed from this project.

12. **Project outcomes:**

Sl. No.	Research Papers
1	Imran Ali, Tabrez Alam Khan, Atiqur Rahman, Syed Dilshad Alam and Joheb Khan., Recent Trends of Arsenic Contamination in Groundwater of Ballia District, Uttar Pradesh, India., <i>GU J Sci</i> , 25(4):853-861(2012)
2	Atiqur Rahman, Imran Ali, Tabrez Alam Khan, Syed Dilshad Alam and Joheb Khan., Dynamics of Land Use/Land Cover Change in Ballia District, Using Landsat TM Data., <i>JoRSG</i> , 4(1): 1-10 (2013)

3	Atiqur Rahman, Joheb Khan, Imran Ali, Tabrez Alam Khan & Syed Dilshad Alam. 'Assessing spatial variations of groundwater arsenic in shallow aquifers with surface elevation, slope and water-table using geospatial techniques in Ballia district, India'. <i>International Journal of Geographical Information Science, Taylor and Francis</i> . (Communicated)
	Seminar/Conferences
4	Imran Ali, T. A. Khan, Atiqur Rahman, Joheb Khan and Syed Dilshad Alam, Monitoring of arsenic in ground water of Ballia District. "Climate Change & Environment" Al-Falah School of Engineering & Technology an Autonomous Institute Faridabad (Haryana), on 22 nd April, 2011.
5	Imran Ali, T. A. Khan, Atiqur Rahman, Syed Dilshad Alam and Joheb Khan, Arsenic Mitigation and Health Effects in Ballia District, Uttar Pradesh, India "Recent Advances in Chemistry" (RAC-12)
	Ph.D.
6	One student pursuing PhD, thesis entitled "Mapping and Monitoring of Arsenic in the Groundwater of Ballia District (U.P.) with Health Impact Using Geospatial Techniques".

13 **Benefit from the project to the society:**

The results of the project are important for avoiding arsenic drinking water in Ballia district of U.P. The maximum limit of arsenic is 10 ppb set by WHO for drinking purpose. Above this limit the drinking water may cause some diseases or abnormalities in human body. This project may help them to understand the chemistry and logics behind the contaminated water and how we should take safe drinking water.

14 **Any other information you may think is important in this regard:**

- The chemical analysis of the study shows that deeper aquifers contain lower arsenic than shallow and medium ones and, therefore, it is suggested that source of drinking water for the population of Ballia should be drawn from the deep aquifers and not from the shallow one.
- There is a risk that excessive ground water withdrawal is taking place mainly for irrigation. Therefore, any other viable source of irrigation may be worked out to avoid excessive withdrawal for ground water to protect arsenic contamination.
- Alternative sources of drinking water such as rainwater harvesting, surface water with proper watershed management should be explored and prioritised. Additionally, awareness among people and adequate supply of arsenic-safe water to the affected population are required.
- As per report of Central Groundwater Board (CGWB), the ground water in the area occurs under unconfined to semi-confined to confined conditions. Thus, there is good scope of ground water development through hand pumps, bore wells and tube wells constructed at favourable sites and particularly for drinking purpose in view of occurrence of arsenic in ground water.
- Mass Awareness Programme on the theme 'Arsenic Problem in Ground water in Ballia district' must be organized about health hazards due to arsenic contaminated water, role of better nutrition and use of safe water

Faculty of Natural Sciences
Department of Chemistry

1. **Name of the Department:** Department of Chemistry
2. **Project Title:** Synthesis and Characterization of Ni(II) and Pt (II) Complex of Azole based Ligands: Potential Anticancer Agents
3. **PI:** Prof Kishwar Saleem (**Retired**)
4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 1,30,000

Faculty of Natural Sciences Department of Chemistry

1. **Name of the Department:** Department of Chemistry
2. **Project Title:** Development of Small-Scale Potable Water Treatment Devices Based on Polymeric Disinfectants for Rural Population of India
3. **Principal Investigator:** Dr. Nasreen Mazumdar



4. **Co-Investigator:** None
5. **Funding Agency:** American Association of University Women (AAUW) Educational Foundation, Washington DC, USA
6. **Amount Funded:** INR. 18,20,000
7. **Project Duration:** 1 year
Place of Project work: (a) Department of Chemistry and Chemical Biology Rutgers University, Piscataway New Jersey, USA (b) Food Science Department Rutgers University, Cook Campus New Jersey, USA
8. **Starting Date:** 1 July, 2008 - 30 June, 2009
9. **Project Objective:** The objective of the project was to develop a polymer based water disinfectant and design a simple water treatment device for home use by people who do not have access to municipal water supply. The idea was to develop an iodine-releasing polymeric formulation and examine its potential as a domestic water purifier for untreated surface water.
10. **A brief overview:** An antimicrobial tablet formulation was developed using a natural carbohydrate polymer, polyvinyl alcohol, ethyl cellulose and an iodophor. The polymer coated tablets were stable, non-vaporizing and water insoluble at room temperature and slowly released iodine in water. Overnight release of iodine from the tablets was enough to kill 99.9% of the microorganisms present in polluted water.
11. **Project outcome:** (a) Paper published: Nasreen Mazumdar, M. L. Chikindas and Kathryn Uhrich, "Slow Release Polymer-Iodine Tablets for Disinfection of Untreated Surface Water", Journal of Applied Polymer Science, vol. 117, 329-334, 2010 (b) Papers/talks in meetings, conferences:
 - Many talks on various aspects of the project, prevailing drinking water situation in rural India and solution, in weekly meetings at the Department of Chemistry and Chemical Biology, Rutgers University, NJ and AAUW Headquarter in New York, USA

- An invited lecture on “Water and Women: Some Reflections” at Schering Plough Research Institute, Summit, New Jersey, USA on June 7, 2009
- An invited lecture on “Polymeric Disinfectants” at a conference “Frontiers in Polymer Science II” at the Department of Chemistry, HPU, Shimla on December 13, 2013 (c) International recognition: This research has been reviewed and approved by the Oxford University Central University Research Ethics Committee (Ref No: SSD/CUREC1A/13-247).

Faculty of Natural Sciences Department of Chemistry

1. **Name of the Department:** Department of Chemistry
2. **Project Title:** Development of Natural Polymer Based Iodine Supplementation to Combat Iodine Deficiency, a Nutritional Problem Faced by Indian Women
3. **Principal Investigator:** Dr. Nasreen Mazumdar



4. **Co-Investigator:** None
5. **Funding Agency:** American Association of University Women (AAUW) Educational Foundation, Washington DC, USA (under International Project Grant Program)
6. **Amount Funded:** INR. 3,33,000
7. **Project Duration:** 1 year
Place of Project work: Department of Chemistry Jamia Millia Islamia, New Delhi-25
8. **Starting Date:** 1 July, 2009 - 30 June, 2010
9. **Project Objective:** The project was conceived for women in India, particularly the expecting and the lactating mothers who are prone to develop iodine deficiency as they need higher doses of iodine at this phase of their lives. The research project aimed to develop iodinated polymer capsules that would release an adequate level of iodine in water thus reducing the salt consumption, dependency on balanced diet and the advantage of varying iodine level in water depending on the need of the consumer.
10. **A brief overview of the project:** During the project hydrogel films were developed using a natural polysaccharide gum, polyvinyl alcohol and an iodophor (PVP-I). The films were crosslinked with glutaraldehyde. Release of I^- ions from the films was measured and the values compared with that available from commercial iodized salt. Total iodine released from the hydrogel system in water was 147 $\mu\text{g/ml}$ in one hour and the value is comparable to recommended nutritional intake (RNI) of iodine for an adult in a day.

11. **Project outcome:** (a) Paper communicated: Nasreen Mazumdar and Ishraque Ahmad "An Iodine Releasing Polymer Prepared From a Blend of Natural Gum, Polyvinyl Alcohol and PVP-I for Nutritional Purpose" (b) Papers/talks in meetings, conferences:
- Presented a paper "Iodine Complexes of Chemically Modified Natural Gum and their Use as Iodine Release Systems" at EPNOE 13, International Polysaccharide Conference organized by ACS and EPNOE (European Network of Polysaccharide) on October, 2013 in Nice, France
 - Presented a poster titled "An Iodine Releasing Polymer for Use as Source of Dietary Iodine" at Global R & D Summit-Destination India in New Delhi, July 2013 organized by FICCI and DST.
 - Presented a paper "Iodine Release Systems Based on a Natural Gum for Use as a Dietary Iodine Source" at the conference "New Frontiers in Chemistry" held at the Department of Chemistry, Punjabi University, Patiala on February, 2013

Faculty of Natural Sciences
Department of Geography

1. **Name of the Department:** Department of Geography
2. **Project Title:** Solid waste management in Ambedkar Nagar District using remote sensing and GIS techniques
3. **PI:** Prof. Ahsan Masood Siddiqui



4. **Co-PI:** Dr. Lubna Siddiqui, Dr. Haroon Sajjad.



5. **Funding Agency:** UGC
6. **Amount Funded:** INR. 1078733/
7. **Duration of the project:** Three years
8. **Starting date of the project:** 1.3.2010-28.2.2013
9. **Project Objectives:**

To estimate weight, type and characteristics of municipal waste per head/per day in selected towns of Ambedkar Nagar

- To analyze the spatial pattern of solid waste generation and collection in selected towns
- To examine the existing solid waste management system of the study area.
- To identify suitable sites for waste disposal
- To develop efficient and economic solid waste management strategy to improve the waste management system

10. **A brief overview:**

The study deals with rate generation, collection and disposal of solid waste in a

Ambedkar Nagar district of Uttar Pradesh. All the three selected towns are growing towns but largely rural in character. Akbarpur generates about 18.08 ton solid waste daily, whereas Tanda and Jalalpur generate about 28.67 and 7.83 ton daily. The average generation per/head/day for these towns is 0.206, 0.345 and 0.270 kg. The deployment of sanitary staff is skewed affecting the work force efficiency. There is no co-relation between manpower deployment and quantity of waste generation, population served or area of the circle. The result is that sweeper population ratio, sweeper-road length ratio and bin- population ratio are far below the standard norms. It is important to note that there is no segregation of waste neither at source nor at destination. In all the towns only about 50 per cent of the total area is attended regularly for sweeping and collection.

Two new disposal sites were identified in Akbarpur, one in Tanda and one in Jalalpur. Among the proposed sites except in Akbarpur, the sites in the other towns are highly sensitive particularly on the basis of environmental and receptor parameters. The entire identified site will be functional for at least 10 years.

With a view to improve the system, waste collection routes were identified in terms of distance, time, and collection. It is concluded that by implementing this plan the municipal budget of Akbarpur will increase by 78.23 per cent but at the same time the collection efficiency will increase by 27.57 per cent, sweeper population ratio, sweeper-road length ratio and bin population ratio for all the wards will improve by 71, 98 and 52 per cent respectively. The estimated collection cost per capita and per ton will rise substantially.

In case of Tanda, the increase in expenditure is by about 63.7 per cent leading to improvement in the collection efficiency. In Jalalpur the expenditure increased by 33 per cent only but the collection efficiency increased by 96 per cent, collection cost per ton and per head declined by about 33 per cent. The sweeper-population ratio, sweeper-road length ratio and bin population ratio have improved substantially.

11. [Infrastructure created](#): HP laser printer, Samsung Galaxy Tab, Dell Laptop, Hand held GPS
12. [Project outcome](#): Research papers communicated-2 Conference presentation-01

13. [Benefit from the project to the society:](#)

The mapping and analysis of the different aspects of solid waste has helped the all the three municipalities of the study area to improve their waste management system. It ultimately will help in the improvement of health and hygiene of the people

14. [Any other information:](#) Nil

Faculty of Natural Sciences Department of Geography

1. **Name of the Department:** Department of Geography
2. **Project Title:** Geospatial information integration, modeling and digital mapping of urban sprawl using geoinformatic techniques: A study of NCR region Delhi.
3. **PI:** Dr. Madan Mohan



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 7,58,700
7. **Duration of the Project:** 2 yr (Six month extension)
8. **Starting & Completion date of the Project:** May-2009 to Nov-2011
9. **Project objectives:**
10. **A brief overview:**

The objectives of the project are mentioned as follows:

- i. to detect the spatial patterns of land use land cover changes over the periods;
- ii. to examine the impacts of population growth trends and patterns on urban sprawl;
- iii. to explore suitable strategies for sustainable urban development.

The above objectives have been framed in context to enquire the process of urban sprawl. The urban sprawls have by and large been responsible for changes in land use and land cover over the periods. The continuous in-migration and the population growth trends and patterns have driven to speed-up the process of urban sprawl. So, the suitable strategies have been evolved and explored for sustainable urban development in the National Capital Region, Delhi.

11. **Infrastructure created from the project:**
Infrastructure provided by the university.
12. **Project outcomes:**
 1. Mohan, Madan (2011) "Impact of Delhi Metro Corridors Network on Urban Sprawl in National Capital Region: A Case Study of NOIDA City, India", in International Geographical Union (IGU) International UGI 2011 Conference Proceedings, Santiago, Chile, South America, pp. 1-13.
 2. Mohan, Madan (2010) "Geospatial information for urban sprawl planning and policies implementation in developing country's NCR Region: A study of NOIDA City, India" in XXIVth FIG International Congress Proceedings, Sydney, Australia, pp. 1-14.

3. Mohan, Madan (2009) "GeoSpatial Information Integration, Modeling and Digital Mapping of Urban Sprawl: A Study of NOIDA City, India" 24th International Cartographic Conference Proceedings, Santiago, Chile, South America, 1-14.

13. [Benefit from the project to the society:](#)

Consequently, the increasing pace of urban sprawl has resulted into the large scale agriculturally productive land conversion into the concrete jungle or built-up area. The agricultural land resource is under stress due to the increasing pressure of population. This has resulted into widespread destruction of the fertile agricultural land and natural vegetation as well as the shrinkage of 'green cover' as the National Capital Region is losing its share of greens cover over the periods. However, the sustainable urban and environment development is the most important concern for the National Capital Region at the threshold of the 21st Century.

Faculty of Natural Sciences Department of Geography

1. **Name of the Department:** Department of Geography
2. **Project Title:** Quality of Urban life along River Yamuna (Delhi Segment): A Geospatial approach
3. **PI:** Prof. Shahnaz Parveen, Geography.



4. **Co-PI:** Dr. Mohd. Mazhar Ali Khan



5. **Funding Agency:** UGC
6. **Amount funded:** INR. 11,55,687
7. **Duration of the Project:** 3yr
8. **Starting & Completion date of the Project:** Feb-2010 to Jan-2013
9. **Project objective:**

The basic objective of the study is to analyze the issues related to urban quality of life (UQOL) of population living along River Yamuna with the application of geo-spatial technology. The spatio-temporal changes in natural / built environment had to be identified and availability, accessibility, affordability of basic parameters of physical quality of life had to be mapped through remote sensing, GIS and GPS. The problem also called for identification of standard of living of various socio-economic strata of population within certain pre determined distances away from the river Yamuna front at both indoor and outdoor levels within the selected sampled areas to give pertinent suggestions.

10. **A brief overview:**

The present project has addressed issues related to urban quality of life (UQOL) of population living along a river front, River Yamuna, with the application of geo-spatial technology. The study analyses the landuse/landcover changes through IRS-P6 L4MX (Resourcesat-I) with 2.5 meter resolution, CARTOSAT-I with 5 meter resolution and IRS- 1D LISS-III data with 23.5 meter resolution, to prepare different layers of analysis related to physical parameters of QOL with a special focus on the built environment. The accessibility, availability of basic infrastructural facilities also mapped through field verification from GPS. The areas with high density

and severe environmental problems were identified and mapped through GIS. Finally Principal Component Analysis was used for finding out the dimension of UQOL for selected localities in the study area.

The study has revealed a plethora of environmental, social, economic and infrastructural provision problems of UQOL for different socio-economic sets of locality living along river Yamuna . The area specific problems are highlighted with probable suggestions.

11. **Infrastructure created from the project:**

HP Pavillion H8-1000 Desktop, Scanner HP – G 4050 , Printer HP1525n, GPS Oregon 550, Sony HDR-CX 260VE, Digital Notepad i-ball A414 .

12. **Project outcomes:**

13. **Benefit from the project to the society:**

All the planning agencies from various disciplines are trying to attain a two fold goal: the requirement of population and conservation of various types of environment whether physical, economic, social or any other. This is reflected in all the developmental plans of town and country planning, environmental planning, pollution control boards, surface and ground water commissions, Human welfare organizations, HUDCO, Population Research Centers. Therefore, to address the contemporary environmental issues in a metro city like NCT of Delhi, it is expected that the quality of urban life approach will help the following agencies:

- a. HUDCO- for housing
- b. SPA & IIT- for urban and environmental planning
- c. MCD- for infrastructural development
- d. Health departments- to control over air pollution and water borne diseases
- e. Human Welfare organizations for social justice
- f. Resident Welfare Associations(RWA) for locality maintenance

14. **Any other information you may think is important in this regard:**

Papers are communicated. The project is being organized in the form of a book to be published soon .

Faculty of Natural Sciences
Department of Geography

1. **Name of the Department:** Department of Geography
2. **Project Title:** Crime against Urban women in NCR; A spatio tempotal analysis
3. **PI:** Dr. Mary Tahir



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 1,65,000
7. **Duration of the project:** 2 years
8. **Starting & Completion date of the Project:** 1-2-2011 to 31-1-2013
9. **Project objectives:**

To anlyse the various categories of crime against women and legislations pertaining to them to anlyse crime pattern in the NCR vis- a- vis occupational structure of women,to anlyse the various categories of crime against women and legislations pertaining to them . to anlyse crime pattern in the NCR vis- a- vis the educational status of women.to analyse the occurence of crime at place of residence,place of work and while commuting.

10. **A brief overview:**

This project was undetaken to find out the scenario of crime committed against urban women in the national capital region of delhi.the focus of the study is to find out the various types of crime committed and the legislatons pertaining to such crimes.the studyis a mix of literature search and a survey of women across age ,economic and social groups in the city.the survey sample included 300 respondents.the following conclusions were drawn from the primary survey of victims in NCR. the highest percentage(31%) of victims was from the age group 25-35. majority of the people were literate. around half of the victims(47%) have an annual income between 1 lakh and 3 lakh.about 1/3 of the victims have annual income less than 1 lakh . the birthplace of victims was mainly rural. most of the women had a nuclear family set up except in Gurgaon where 34% of the victims have a joint family set up.79% have been victims of eveteasing,8% molested ,14% harrasment at workplace and 17% domestic violence thus on the whole urban literate women are equally vulnerable to being victims of crime. both rich and poor women are susceptible to being victims of crime evetteasing followed by domestic violence and harrasment at workplace are very common crimes in NCR region . thsi clearly indicates absence of safety

measures in public places .

11. [Infrastructure created from the project](#): books and a laptop.
12. [Project outcomes](#):
Research papers and lectures
13. [Benefit from the project to the society](#): since crime against women has been escalating over the years it is vital to understand the problem after a primary survey conducted in the NCR region. various recommendations have been included in the project related to the safety of women due to female empowerment there has been increase of women in public places and their safety is vital for the development of the country.
14. [Any other information you may think is important in this regard](#)-

Faculty of Natural Sciences
Department of Mathematics

1. **Name of the Department:** Department of Mathematics
2. **Project Title:** Numerical solution for solving singularly perturbed value problems with applications to Science and Engineering
3. **PI:** Dr. Arshad Khan
4. **Co-PI:** Nil
5. **Funding Agency:** DST
6. **Amount funded:** INR. 13,80,000
7. **Duration of the Project:** 3yr
8. **Stating & Completion date of Project:** April 29, 2011 to April 28, 2014
9. **Project Objective:**
 - Study of singular perturbation problems and their applications in science and engineering.
 - Development of efficient numerical methods for solving the second and higher order singular perturbation problems.
 - Discuss the Stability/ convergence of the methods.
 - Computer Implementation of the method by using mathematical software's like MATLAB.
10. **A brief overview:**

As it is already known that the singular perturbation problems are a common occurrence in all branches of science and engineering such as fluid dynamics, quantum mechanics, optimal control, chemical reactor theory, aerodynamics, reaction–diffusion processes, geophysics, etc. But in the literature, physical significance has not been discussed in details so it is proposed in the first part of this proposal to discuss the physical interpretation of such problems with applications in science and engineering.

To explain our methodology to develop the efficient numerical methods for second and higher order SPBVPs with the stability and convergence analysis along with computer implementation, we consider a linear singularly perturbed two-point boundary value problem of the following form as considered in reference [1-3,7]:

$$\epsilon u''(x) + p(x)u'(x) + q(x)u(x) = r(x), \quad x \in [a, b] \quad (1) \text{ with } u(a) = \alpha$$

$$(2) \quad u(b) = \beta$$

(3) where ε is a small positive parameter ($0 < \varepsilon \ll 1$) and α, β are known constants. We assume that $p(x)$, $q(x)$ and $r(x)$ are sufficiently continuously differentiable functions in the interval $[a, b]$. Further more, we assume that $p(x) \geq M > 0$ throughout the interval $[a, b]$, where M is some positive constant. This assumption merely implies that the boundary layer will be in the neighbourhood of $x = a$.

Since singular perturbation problems exhibits boundary layer behaviour of the solution, so after developing the method we have to implement it on the problem of type 1-3 by choosing the mesh ratio $\sigma = h_i / h_{i-1}$ and N be the number of mesh points in the interval $[a, b]$. For simplicity we take $\sigma_i = \sigma$, a constant.

$$h_0 = \{(b-a)(\sigma-1)/(\sigma^N-1)\}, \sigma \neq 1.$$

Therefore given the values of N and σ , we can choose h_0 from above and h_i can be obtained as $h_i = \sigma_i h_{i-1}$, $i = 1(1)N$.

11. Infrastructure created: Nil

12. Project Outcomes:

We have carried out some new results based on Non-polynomial spline solution for solving Second order and exponential spline solution for higher order Singularly perturbed boundary Value problems. Also carried out convergence analysis and compare the results with known methods which shown that results of our methods are superior than other methods.

(b) Conference/ Workshop

S N	Name of Conference/ Workshop	Presentation Title	Duration	Place	Countr y
1	National Conference on Frontiers in Analysis and Differential Equations	Non-Polynomial sextic spline Solution of second order Singularly-Perturbed Boundary-Value Problems	Decembe r 19-20, 2012	Bharathidasa n University, Tiruchirappalli	India

2	DST workshop	progress report on project entitled “Numerical solution for solving singularly-perturbed boundary-value problems with applications to Science and Engineering”	April 10-11, 2014	IISER , Bhopal	India
3	International Congress of Mathematicians (ICM-2014)	A family of non-uniform mesh exponential spline methods for singularly perturbed singular boundary value problems with significant first derivative	August 13-21 ,2014	Seoul	South Korea
4	International Conference on Algebra, Geometry, Analysis and their Applications (ICAGAA-14)	An exponentially fitted cubic spline method for singularly perturbed boundary value problems	Novembe r 27- 29, 2014	JMI, New Delhi	India

Faculty of Natural Sciences

Department of Biosciences

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Development of luminescence based Biosensors for the detection of mercury ions in water bodies.
3. **Project Investigator:** Prof. Arif Ali
4. **Co-Investigator:** None
5. **Funding Agency:** Ministry of Environment and Forest
6. **Amount funded:** INR 7, 30,538.
7. **Duration of the project:** Three years
8. **Starting and completion date of the Project:** October 17, 2007- October 17, 2010
9. **Project Objectives:**
 - a) To collect water samples from different geographical locations of India and to obtain Photobacteria from different universities.
 - b) To isolate the Hg resistant *E. coli*. By performing MIC test.
 - c) Designing of primers for *merR-op-T* and *luxCDABE* genes in accordance with expression vector.
 - d) Amplification of *merR* and *lux* by PCR.
 - e) Amplification of *luxCD* and *luxDABE* genes.
 - f) Cloning of *MerR-op-T* and *luxCD* genes in expression vector pET 28(a)
 - g) Cloning of *luxCD&luxDABE* genes in *pmer* (pETcontaining*merR-op-T*) vector.
 - h) Calibration of sensor cells with known concentrations of mercuric chloride.
 - i) To check the specificity of sensor cells by testing it with other heavy metals.
 - j) Collection of water samples from different polluted geographical locations of India.
 - k) Assessment of mercury ions through sensor cells.
10. **A brief overview of the project:**

Although humans recognize the fact that life on earth is non-existent without water, they disregard it by polluting wetlands and groundwater. In addition to the innocent organisms dying off due to contaminated water, the quality of drinking water has also been affected making it unfit for drinking and for other recreational purposes.

Water pollution due to heavy metals like Mercury (Hg), Lead (Pb), Arsenic (As), Chromium (Cr) and Cadmium (Cd) etc, are the main pollutants of concern. In addition to natural process of vulcanization and erosion, various anthropogenic activities have added the unmanageable amount of heavy metals in the environment. Industrial water pollution occurs due to discharge of harmful chemicals, toxic elements in water and the surface water is the main source of industries for waste disposal.

Human being can be exposed to heavy metals through environment and also to higher doses during their occupation or accidental exposure and the perfect example of this is heavy metal-**Mercury**, which cannot be either created or destroyed by humans. It does not have any beneficial role in humans but its exposure causes many health hazards and it has been estimated that the minimum lethal dose of methyl mercury for a 70-kg person ranges from 20 to 60 mg/kg that can kill him.

In view of toxicity and harmful effects that it inflict upon the whole community, there is need to prevent the environmental mercury poisoning by measuring and monitoring of

this heavy metal (poison). Classical methods of detection such as atomic absorption spectrometry and cold vapor atomic fluorescence spectrometry are not sufficient because of need of sophisticated instrumentation and highly skilled personnel, complicated-expensive sample preparations and long measuring time period.

Thus, recognizing the above limitations the present work was conceded to construct the sensitive bacterial biosensor by selecting highly mercury resistance *E. coli* strains regulatory gene fused with promoter less *lux* genes, which evaluates the real time data of inorganic mercury in polluted and non-polluted water bodies without labour-intensive and less time consuming sample preparations.

Abstract of the Project:

Given the human health and environmental pollution concern, a critical and serious research endeavour was started in the last decade to address the problems of detection and elimination of pollutants. The detection of chemical species relies on classical methods such as atomic absorption spectrometry, cold vapour atomic fluorescence detection and inductively coupled plasma mass spectrometry due to their specificity and sensitivity. However, such methods might not distinguish pollutants that are available to biological systems from those that exist in the environment in the biologically inert forms. This is a particular concern with the toxic metals. Thus the use of biosensor technology to monitor processes via biological output can be the alternative for the detection of pollutants. They offer inexpensive and reliable measurements of specific pollutants and overcome the inability of traditional analytical methods to accurately access the bioavailability.

Bacterial biosensors, consisting of genetically engineered bacteria containing a contaminant-sensing gene capable of detecting the presence of an analyte, coupled with a reporter gene capable of producing a detectable response. A novel approach for a microbial whole-cell sensor is to use recombinant-DNA technology to construct a plasmid or other vector system in which a strictly regulated promoter is connected to a sensitive reporter gene. Luciferase genes are widely used reporter genes in prokaryotic as well as eukaryotic systems, because they provide the sensitive and simple detection of gene expression and regulation. The quantification of light emission, i.e., bioluminescence, is one of the most sensitive means of detection, and it can be measured with a liquid scintillation counter or a luminometer. The most commonly used luciferases is the bacterial luciferases of *Vibrio harveyi* and *Vibrio fischeri*. Thus the bacterial biosensor expressing the *lux* genes provide an efficient alternative for the detection of bioavailable pollutants.

The objective of the project was to construct the sensor bacteria through recombinant DNA techniques that can sense the presence and quantify the amount of mercuric ions present in the water bodies. The non-luminescent standard laboratory strain of *E. coli* was genetically modified to produce bacterial luciferase upon exposure to bioavailable mercuric ions.

11. [Infrastructure created from the project:](#) Nil

12. [Project outcomes:](#)

List of research papers/published accepted in the research work

- a) Abstract- Detection of Mercury (Hg^{2+} A Heavy Metal) in a contaminated water sample by Fiber-optic based biosensor (NSIF-2007).

- b) Review-Biosensors- A tool for early detection of pollutants. Manav Rachna International Journal of Engineering and Technology, Vol.1, 2008.
- c) Abstract- Implication of R-factor mediated resistance mechanism of *E. coli* for detection of heavy metals in contaminated water samples (49th AMI) 2009.
- d) Abstract-Implicating Regulatory (*R*-factor) of *E. coli* for assessment of Mercury ions in water samples (Halifax-2011).

13. [Benefit from the project to the society:](#)

Recommendation including remedial measures relevant to the environmental problems studied under the scheme.

It is proposed that the biosensors developed in this study should be used as a first line of detection for the presence of mercury pollution in water and wastewater. Thereafter, established physical and chemical methods may be used to verify findings obtained with the biosensors. The bacterial biosensor constructed in the study demonstrated their potential to detect the presence of mercuric ions in the water bodies and Yamuna River and Hindon River was found to have mercuric ions concentration above the permissible limits of 1ppb. Although the ground waters of Okhla contains slightly more or somewhere less concentration of mercury content but still requires measures to be taken for the effective removal. Hooghly river was found to have very less mercury but this water is also not suitable for drinking as from earlier reports it is very clear that it contains the high amount of arsenic (another toxic metalloid). Ganga river (Rishikesh, U.K) sample was found to have least amount of inorganic mercury and can be said that this water is safe for drinking and other recreational purposes.

Faculty of Natural Sciences

Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Molecular approach for the diagnosis of atypical enteropathogenic *Escherichia coli* causing diarrhoea.
3. **Project Investigator:** Prof Arif Ali, Department of Biosciences, Jamia Millia Islamia.
4. **Co-Investigator:** None
5. **Funding Agency:** University Grants Commission
6. **Amount Funded:** INR 9, 40,251
7. **Duration of the project:** 3 years and 6 months
8. **Starting and completion date of the Project:** February 01, 2009 – July 31, 2012.
9. **Project Objectives:**
 - a) Collection of faecal samples of Diarrhoea infected patients and isolation of Enteropathogenic *E. coli* (EPEC) strains.
 - b) Serotyping of typical and atypical EPEC genotypes by O group specific polyvalent antisera of EPEC.
 - c) Determination of antibiotic susceptibility patterns of EPEC to reveal drug resistance pattern.
 - d) PCR- based molecular typing of *eae* (intimin) genes of atypical EPEC strains isolated from children with and without diarrhea.
 - e) Analysis of sequence of *eae* genes to reveal the divergence of sequence of *eae* genes of atypical EPEC strains and sequence submission on NCBI Genbank
10. **Brief overview of the project:**

Stool samples were collected from indoor and outdoor paediatric patients from Chacha Nehru Bal Chikitsalaya (a Government Hospital) and Holy Family Hospital (a Private hospital). A total of three hundred and twenty faecal samples were collected comprising of two hundred and seventy samples from sporadic cases of Diarrhoea and fifty samples from healthy individuals. These samples were screened for the presence of *E. coli* and thereafter for the presence of *eae* gene by PCR. We have identified 21 enteropathogenic *Escherichia coli* (EPEC) isolates from 320 children with or without diarrhoea. The identification was based on Polymerase chain reaction by employing three specific primer pairs for EPEC and shiga toxin producing *Escherichia coli* (STEC). Out of 12 EPEC isolates from patient with diarrhoea, four (22 %) were atypical EPEC while fourteen (78 %) were typical EPEC. In all, 25 % of atypical EPEC were detected in the control group of healthy children without diarrhoea.

The serotyping of the isolated EPEC with O group specific antisera showed that O142 and O26 were the most prevalent and found in 5 samples each, O86 and O111 were found in 3 samples each, O125 was found in 2 samples, O55, O119 and O126 were found in 1 sample each. O157, O127, O128, O114 and O103 were not found to be present among the EPEC isolated from our samples.

Antimicrobial susceptibility pattern was performed by Kirby - Bauer method for all *E. coli* isolates. The antibiotic resistant pattern revealed that out of 285 *E. coli* isolates 90 % were resistant to Cefpodoxime/Clavulanic acid, 62 % to Aztreonam and Kanamycin, 66% to Colistin and Ceftazidime, 69 % to Cephalexime, 75 % to Amikacin,

49 % to Nitrofurantoin and Amoxyclav, 84 % were resistant to Cefopodoxime, 28 % to Ceftazidime/Clavulanic acid, and 0 % to Imipenem.

The 3' sequence analysis of *eae* gene from our isolates revealed close relationship with *eae*- α 1, *eae*- β 1, *eae*- β 2, *eae*- γ 1, *eae*- γ 2, *eae*- κ and *eae*- λ . The intimin gene of EPEC isolates from diarrhoea patients is closely related to the subtype *eae*- α 1, *eae*- β 2, *eae*- γ 1, *eae*- γ 2 and *eae*- λ , whereas intimin gene from the healthy children closely related to *eae*- β 1, *eae*- γ 1, *eae*- γ 2 and *eae*- κ . The frequent similarity of the intimin gene of EPEC isolate from diarrhoea patients with *eae*- α 1, is suggestive of its dominant role in human diarrhoea.

11. [Infrastructure created from the project](#) : None

12. [Project outcomes](#): Only Books have been purchased from the project.

13. [Benefit from the project to the society](#):

As children are more prone to diarrhoeal infections and E.coli being one of the major etiological agent, this study is of great relevance. The multidrug resistant EPEC are emerging and that necessitates appropriate therapeutic intervention as regards selection and use of antibiotic. Typical EPEC is more prevalent in children with diarrhoea in Delhi but atypical EPEC is emerging and may prove to be more widespread than typical EPEC. Prospective studies in different locations are required as these would yield definitive conclusions to help policy makers to improve health status in India.

Faculty of Natural Sciences Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Evaluation of antidiabetic compounds from cyanobacteria
3. **Project Investigator:** Prof. Tasneem Fatma.
4. **Co-Investigator:** Dr. Maryam Sardar, Hakim Hifzul Kabir.
5. **Funding Agency:** CCRUM.
6. **Amount Funded:** INR 25, 00,000.00
7. **Duration of the project:** 2009 -2012
8. **Starting and completion date of the Project:** June 30, 2009- June 30, 2012.
9. **Project Objectives:**
 - a) Standardization of protocol for extraction of cyanobacterial insulin like protein.
 - b) Screening of cyanobacterial diversity for insulin like protein.
 - c) Identification of cyanobacterial immunoactive insulin like protein.
 - d) Charecterization of cyanobacterial insulin like protein.
 - e) To check anti-hypoglycemic activity of cyanobacterial insulin like Protein in mice.

10. **A brief overview of the project:**

The world is facing an explosive increase in the incidence of diabetes mellitus, resulting in over three million deaths each year. Due to low yield of animal pancreatic insulin, recombinant insulin emerged as low cost alternative. Unfortunately, this was associated with allergic problems, antigenicity, hypoglycemia and ketoacidosis, that shifted the focus of research towards search for plant based insulin. Thus we proposed to do screening of cyanobacterial strains for insulin like protein. Cyanobacteria are also used in Unani medicine for the treatment of wound, gout, arthritis, stiffness and hernia.

11. **Infrastructure created from the project:**

- a) Western Blot Semidry Device (BioRad)
- b) Ultrasonic Processor (Sonics Vibra Cell)
- c) Digital pH meter (Toshniwal)
- d) Lap Top & Printer (Hp)
- e) Digital Balance (Wensar)
- f) Waterbath with Shaker
- g) Refrigerated Centrifuge (Plasto Craft)
- h) Liquid N₂ Container

12. **Project outcomes:**

Research papers / Articles	Screening of photosynthetic O ₂ evolving prokaryotes for insulin like antigen, J.Phycology, 2012, 48: 243-245 Insulin like antigen: Sources other than pancreas, International Journal of Current Pharmaceutical Research, 2012, 4: 24-28.
Seminars, Workshops, Conferences	"Cyanobacterium : Possible Pharmecological Evaluation for insulin like protein" National Symposium on Plant Biology and its Role in Sustainable Food and Energy, March17-18,2012 Department of Botany , GGV, Bilaspur. "Screening of photosynthetic O ₂ evolving prokaryotes for

	insulin like antigen” Symposium on Psychological Research 25-27 Feb. 2010 Centre of Advanced Study in Botany, BHU, India
Trainings	Trained one Ph.D student (JRF) , One Hakim (SRF) and 2 MSc students.

13. [Benefit from the project to the society:](#)

Few cyanobacterial biomass can be utilized as a new hypoglycemic plant source. It can be used as such or in the form of the isolated insulin like protein. It may provide an effective, safe and cost effective antihypoglycemic drug. These may reduce allergic problems, other side effects.

Faculty of Natural Sciences

Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** “Investigation of insulin-like proteins from *Spirulina*”
3. **Project Investigator:** Prof. Tasneem Fatma, Dept. of Biosciences, Jamia Millia Islamia.
4. **Co-Investigator:** None.
5. **Funding Agency:** UGC.
6. **Amount Funded:** INR 11, 99,000
7. **Duration of the project:** 2009-2012
8. **Starting and completion date of the Project:** February 01, 2009-January 31, 2012
9. **Project Objectives:**
 - a) Extraction of insulin like protein from *Spirulina*
 - b) Detection of extracted insulin like protein by ELISA
 - c) Characterization of extracted insulin like protein by SDS-PAGE
 - d) Characterization of extracted insulin like protein by immunoblotting.
 - e) Purification and characterization of extracted insulin like protein by RP-HPLC
 - f) Correlation between growth phase and insulin enhancement
 - g) Culture condition manipulation for enhancement of the content of insulin like protein
 - h) Secondary structure characterization of *Spirulina* insulin like protein
10. **A Brief overview of the project:**

Diabetes is a serious illness with multiple complications and premature mortality, affecting people of all ages, accounting for at least 10% of total health care expenditure in many countries. Diabetes mellitus comes in two forms Type-I and Type-II. Both types involve the hormone insulin in the body and its ability to process sugar in blood stream. Type _ diabetics do not produce enough insulin in their pancreas and are dependent on insulin injections throughout their lives. Type-II diabetes affects people later in life, usually after age of 40 and accounts for over 90% of all cases of diabetes. Hyperglycemia or hypoglycemia in body adverse effects ranging from kidney failure, eyesight loss and in extreme cases, coma. To reduce this problem, it requires the self-injection regimen of insulin. Unfortunately , insulin therapy (animal and recombinant insulin) to patients for long period resulted in immunological complications due to development of insulin antibodies that cause insulin allergy and chronic disorder like retinopathy, neuropathy, diabetic foot, increased risk of hypertension, disslipidaemia, hypoglycemia etc. as potential clinical adverse effects . management of diabetes without any side effects is still a challenge to medical community. There are many evidences of presence of insulin like proteins in many plants. So far only one cyanobacteria *Spirulina maxima* and one red alga –*Gracilariopsis* have been reported to have this protein. But, their purification, N-terminal amino sequencing has not yet studied. *Spirulina*, a blue green alga is now becoming a health food worldwide. The *Spirulina* ability as potent antiviral, anticancer, hypocholesterolemic etc. is gaining attention as nutraceutical and a source of potential pharmaceuticals. Therefore, present proposal was designed to explore all available Indian species for their potential as a source of insulin like protein.
11. **Infra-structure created from the project:**

- a) ELISA Reader
- b) BOD Incubator –Shaking (JS Research)

12. **Project outcomes:**

Research papers / Articles	<i>Spirulina</i> : Possible pharmacological evaluation for insulin-like protein. J of Applied Phycology, 2013 ,24:583-591 Detection of immunoactive insulin in <i>Spirulina</i> , J Applied Phycology, 2012, 25:883-889.
Seminars, Workshops, Conferences	Detection of immunoactive insulin in <i>Spirulina</i> ” 4 th Congress of the International Society for Applied Phycology, June 19-24,2011, Halifax ,Canada “In-vitro detection of insulin from <i>Spirulina</i> ”, National Conference on Algae and Algal Products. 22-24 th September, 2011, Chennai, India “ <i>Spirulina</i> as a source of antidiabetic substance” ,International Conference on Biotechnology for Better Tomorrow, 6-9 Feb.2011, Department of Microbiology , Osmanabad,India
Trainings	Trained one Ph.D student (JRF/ SRF) , One Research Assistant and 2 MSc students

13. **Benefit from the project to the society:**

Spirulina can be utilized as a natural source of insulin. One can easily grow them in their home

Faculty of Natural Sciences Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Interaction of Malathion pesticide with osmolytes and free radicals in *Anabaena variabilis*.
3. **Project Investigator:** Prof. Tasneem Fatma, Dept. of Biosciences, Jamia Millia Islamia.
4. **Co-Investigator:** None
5. **Funding Agency:** DST
6. **Amount Funded:** INR 18, 69,000
7. **Duration of the project:** 2008 -2011
8. **Starting and completion date of the Project:** February 26, 2008 –February 26, 2011
9. **Project Objectives:**
 - a) To study toxic responses of *Anabaena variabilis* subjected to pesticide stress with special reference to Malathion induced free radical generation and their interaction with cellular osmolytes (proline, glycine betaine, mannitol, sucrose).
 - b) To investigate pesticide induced free radical generation in cyanobacteria and to estimate activities of free radical quenching enzymes (SOD, CAT, APX) and Glutathione.
 - c) To estimate the impact of these pesticides on cyanobacterial N₂ -fixation
10. **A brief overview of the project:**
Anabaena variabilis is nitrogen fixing photosynthetic prokaryotic organism and is thus a main component of rice field biofertilizer. Rice is the most important cereal crop in Asia. To achieve food security through sustainable agriculture, the requirement for nitrogen must be met by biological nitrogen fixation rather than by industrial nitrogen because the current approach based on chemical nitrogenous fertilizers are very expensive and cause considerable damage to environment and natural resources. Cyanobacteria have been recognized as one of the most promising biofertilizer contributing the fertility of flooded rice fields by reducing N₂ to NH₃ and increasing the rice yield. It is observed that farmers use pesticides and herbicides in their fields along with bio fertilizers. And do not get expected results because these harmful substances also damage non -target organisms like cyanobacterial bio fertilizers. Thus, there is need to develop pesticide resistant biological nitrogen fixers and herbicide. Through this project we want to prove that cyanobacterial strains capable of producing higher amount of osmolytes (like proline, glycinebetaine, sucrose, mannitol, trehalose.) under pesticide stress are more resistant to toxic impact of pesticide.
11. **Infra-structure created from the project:**
 - a) UV-VIS Dual Beam Spectrophotometer (Labomed, Spectro UV 2700)
 - b) Water Bath –Shaking (Jeiotech, BS-06)

12. **Project outcomes:**

Research papers / Articles	Exogenous osmolytes suppress the toxic effects of malathion on <i>Anabaena variabilis</i> , Ecotoxicology and Environmental Safety, 2013, 94: 21-27. Carbaryl stress induced cellular changes in <i>Calothrix</i>
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	<p><i>brevissima</i> , Environmental Science and Pollution Research, 2013, 20 : 862-871.</p> <p>"Biochemical analysis of <i>Anabaena variabilis</i> exposed to malathion pesticide with special reference to oxidative stress and osmolytes," Int. J. Innovative Research in Science, Engineering and Technology, 2013, 2: (10): 5403-5420.</p>
Seminars, Workshops, Conferences	<p>Role of osmolytes in pesticide (malathion) induced oxidative stress in <i>Anabaena variabilis</i>" International Conference : Biotechnology for Better Tomorrow, 1-12 Nov.2013, Rajv Gandhi science Centre, Mauritius,</p> <p>Cyanobacterial osmolyte responses to aquatic pollutants, 8th European Workshop: Biotechnology of Microalgae, 7-10 June , 2010, Nuthetal , Germany</p> <p>" Is there any correlation in cyanobacterial environmental stress tolerance and osmolyte ?" 7th Asia Pacific Conference on Algal Biotechnology, 1-4 Dec.2009, Department of Botany , DU, Delhi, India</p> <p>Role of osmolytes in pesticide (malathion) induced oxidative stress in <i>Anabaena variabilis</i>" International Conference on Algal Biomass Resources and Utilization, 27-30 July, 2009, Chennai, India.</p>
Trainings	Trained Ph.D and MSc students

13. [Benefit from the project to the society:](#)

Development of a good biofertilizer for sustainable development is possible by selecting strains with more osmolyte production potential or by addition of exogenous osmolytes in the fields.

14. [Any other information:](#)

Selected organisms can also be used in water treatment.

Faculty of Natural Sciences Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Antimicrobial activity of cyanobacteria.
3. **Project Investigator:** Prof. Tasneem Fatma
4. **Co-Investigator:** None.
5. **Funding Agency:** ICMR
6. **Amount Funded:** INR 6, 18,986.00
7. **Duration of the project:** 2006 -2009
8. **Starting and completion date of the Project:** November 28, 2006 –November 27, 2009
9. **Project Objectives:**
 - a) Standardization of growth parameters and maintenance of cyanobacterial cultures
 - b) Standardization of extraction protocols utilizing biomass and spent media
 - c) Determination of antimicrobial activity of cyanobacterial extracts against vancomycin intermediate resistance *S. aureus*.
 - d) Determination of antimicrobial activity of extract against *Mycobacterium* spp.
 - e) Determination of antimicrobial activity of cyanobacterial extracts against biofilm forming *S. epidermidis* and *S.aureus* cultures involved in catheter related infections
 - f) Isolation, purification and characterization of biologically active compounds from cyanobacterial extracts.
10. **A brief overview of the project:**

Cyanobacteria are amongst the oldest group of photosynthetic prokaryotes found in fresh and marine environments. The biodiversity associated with cyanobacteria is indicative of chemical diversity, which is an essential prerequisite in this modern drug discovery as there are recent examples of cyanovirin-N secreted by *Nostoc ellipsosporum* and anti HIV glycolipids secreted by *Lyngbya* sp. these blue green algae have become targets of screening programs in search of novel compounds of potential medicinal value. Development of very fast antibacterial resistance in many microorganisms related with many diseases is increasing day by day at very fast rate against the existing antibiotics. Therefore, there is an urgent need for exploring new antibiotics from new sources. Considering the relevance, through present proposal fresh water cyanobacteria will be screened for their antimicrobial potential.
11. **Infra-structure created from the project:** one set of micropipettes
12. **Project outcomes:**

Research papers / Articles	Antimicrobial and cytotoxic activities of cyanobacteria Int. J. Innovative Research in Science, Engineering and Technology, 2013; 2(9): 4328-4342.
Seminars, Workshops, Conferences	“In-vitro activities of cyanobacterial extracts against planktonic and biofilm forms of Staphylococci” 7 th Asia Pacific Conference on Algal Biotechnology, 1-4 Dec.2009, Department of Botany , DU, Delhi, India In vitro activities of cyanobacterial extracts against planktonic and biofilm forms of Staphylococci, Recent

	Developments in Cultured Algae, 4-5 April, 2009, Andhra Univ. Visakhapatnam, India
Trainings	Trained Ph.D and MSc students

13. [Benefit from the project to the society:](#)

Cyanobacteria can be used as probable source of new antibiotics for benefit of mankind.

Faculty of Natural Sciences

Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Peach decline disease: development of molecular diagnostics for management of disease
3. **Project Investigator:** Dr. Jawaid Ahmad Khan, Scientist National Botanical Research Institute (CSIR-NBRI), Lucknow.
4. **Co-Investigator:** Dr. Aminuddin, Scientist NBRI (CSIR), Lucknow, U.P.
5. **Funding Agency:** DBT
6. **Amount Funded:** INR 55.43 Lakhs
7. **Duration of the Project:** 3 years (extended for one more year)
8. **Starting and completion date of the Project:** March, 2006-March, 2010
9. **Project Objectives:**
 - a) Molecular characterization of 16S rRNA gene and 16S/23S intergenic region (IR) of phytoplasma operon.
 - b) Development of phytoplasma-specific molecular probes.
 - c) Detection of peach decline phytoplasma in alternate/weed hosts based on nested PCR.
 - d) Detection of the associated phytoplasma occurring in insect vector.
 - e) Quantification of peach phytoplasma in different stages (eggs, nymphs, larvae) of insect vector.

10. **A brief overview of the project:**

Peach (*Prunus persicae*) is cultivated as a fruit crop in most parts of the temperate zones of world. In India, it is a highly remunerative temperate fruit crop of Himachal Pradesh state and occupies an area of about 5000 hectare in the state. During mid 1980, a disease with phytoplasma-like symptoms was observed to occur on a few peach trees in the famous peach valley of Rajgarh area (District Sirmour, H.P., India). The disease is characterized by yellowing of leaves accompanied by marginal rolling and occasional scorching with burnt-like appearance (Fig. 1). Further, fruits shrivel in size and often drop prematurely ultimately resulting in decline and death of infected plants. Since its first appearance, the disease has regularly been noticed in peach orchards. Now it has become a serious concern to the growers and research workers as it poses a threat to peach cultivation in H.P. state. Although the association of phytoplasma with this devastating disease has been established (Thakur *et al.*, 1998; 2006), the phytoplasma remains unidentified.

Leaf samples were collected from nine phytoplasma suspected and healthy looking peach trees grown in Rajgarh (H.P.). Total DNA from leaves of either diseased or healthy peach trees was subjected to nested PCR assay employing phytoplasma universal primer pair (P1/P7) followed by a different set of primers (P1/Tint), as described elsewhere (Khan *et al.*, 2004, Smart *et al.*, 1996) yielding DNA fragments of 1.6 kb. The PCR products from five diseased trees were digested with randomly selected restriction endonucleases *AluI*, *BfaI*, *DraI* and *EcoRI*. The resulting RFLP profile for each enzyme was identical, indicating that all PCR positive trees contained a similar phytoplasma. The PCR amplicons (~1.6 kb) derived from three diseased trees were

cloned into plasmid vector and nucleotide sequences were determined. The 16S rDNA sequences obtained from the three clones were identical with each other, and the consensus sequence was archived in GenBank as accession no. JQ695914. Pair wise comparison of the nucleotide sequences by BLAST analysis revealed that it is most similar (99%) to '*Candidatus* Phytoplasma ulmi' belonging to the 16Sr-V group. A dendrogram was constructed using 16S rDNA sequences of reference phytoplasmas available in GenBank. Phylogenetic analysis was in line with BLAST comparisons and confirmed that the peach decline phytoplasma is related to the members of 16Sr-V group. A virtual RFLP pattern employing 14 restriction enzymes (*AluI*, *Bam*HI, *Bfa*I, *Dra*I, *Eco*RI, *Hae*III, *Hha*I, *Hin*fI, *Hpa*I, *Hpa*II, *Mse*I, *Rsa*I, *Ssp*I, and *Taq*I) was generated (Wei *et al.*, 2007). It exhibited its relatedness to the members of 16Sr-V group (Fig. 4). Therefore, on the basis of nucleotide sequence identity, phylogenetic analysis and virtual RFLP pattern of 16S rDNA, phytoplasma associated with *P. persica* decline disease can be designated as a strain of '*Ca. phytoplasma ulmi*'. This is the first definitive identification of a 16Sr-V group phytoplasma ('*Ca. phytoplasma ulmi*') associated with *P. persica* decline disease in India. An early identification of the decline phytoplasma will have significant phytosanitary impact to monitor and locate its infections in the nursery and orchards to check spread of the disease.

11. **Infrastructure created from the Project:**

- a) Deep Freezer (-20°C)
- b) Refrigerated Table-Top Centrifuge

12. **Project Outcomes:**

Research paper	Khan JA, Kumar J, Thakur PD, Handa A, Jarial K (2014). First report of a <i>Candidatus</i> Phytoplasma Ziziphi-related strain associated with peach decline disease in India. <i>Journal of Plant Pathology</i> (Italy), <i>In Press</i> .
Trainings	Trained one Ph.D student (JRF and SRF)

13. **Benefit from the project to the society:**

Developed sensitive diagnostic probes for the early detection of phytoplasma occurring in peach plants, so, an early identification of peach decline phytoplasma will have An early identification of the decline phytoplasma will have significant phytosanitary impact to monitor and locate its infections in the nursery and orchards to check spread of the disease. A phytoplasma associated with the peach decline disease was identified for the first time in the peach infected trees and it was designated as a strain of '*Ca. phytoplasma ulmi*', so this was the first definitive identification of a 16Sr-V group phytoplasma ('*Ca. phytoplasma ulmi*') associated with *P. persica* decline disease in India.

Faculty of Natural Sciences

Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Fast reaction kinetics of glucose activation of Plasma membrane H⁺-ATPase from *Candida albicans*.
3. **Project Investigator:** Dr. Luqman Ahmad Khan
4. **Co-Investigator:** Dr. Nikhat Manzoor, Department of Biosciences, JMI.
5. **Funding Agency:** UGC
6. **Amount Funded:** INR 9,24,263.00
7. **Duration of the project:** Three years.
8. **Starting and completion date of the Project:** April 1, 2008 to March 31, 2011
9. **Project Objectives:**

Candida albicans is important opportunistic pathogen of humans which has shot into prominence in recent years largely due AIDS, modern invasive surgical procedures and long chemotherapy regimes. Plasma Membrane H⁺-ATPase of *Candida albicans* is an electrogenic pump. This pump regulates intracellular pH, maintains ion balance, and generates the electrochemical proton gradient necessary for nutrient uptake. The pump therefore is a potential target for both, therapeutic and prophylactic agents. Knowledge of mechanism of pump function and its glucose regulation is required for design of mechanism based drugs.
10. **A brief overview of the project:**

Candida albicans is clinically important opportunistic pathogen of humans which has shot into prominence in recent years largely due AIDS, modern invasive surgical procedures and long chemotherapy regimes. Plasma Membrane H⁺-ATPase of *Candida albicans* is an electrogenic pump. This pump regulates intracellular pH, maintains ion balance, and generates the electrochemical proton gradient necessary for nutrient uptake. Activity of the pump is intimately associated with morphological switching from yeast to hyphal form, the later being more invasive and therefore pathogenic. Glucose profoundly regulates H⁺-ATPase activity and effects all pump associated functions of the yeast. Drugs targeted at this enzyme can be expected to limit both fungal growth and morphogenic choice. The pump therefore is a potential target for both, therapeutic and prophylactic agents. Knowledge of mechanism of pump function and its glucose regulation is required for design of mechanism based drugs.

In the present study we have explored H⁺ extrusion by steady state as well as pre-steady state kinetics of H⁺-ATPase both from glucose starved cells and glucose metabolizing cells. This H⁺-ATPase from yeast is similar to Na, K-ATPase, H⁺/K⁺-ATPase and Ca²⁺-ATPase from animal cells with respect to their location, vanadate sensitivity and reaction mechanism. Results obtained from kinetic studies performed on *Candida albicans* H⁺-ATPase would be thus be broadly applicable on other eukaryotic cation translocating ATPases.
11. **Infrastructure created from the project:**

Medical Mycology Laboratory with all facilities for testing of antifungals.
12. **Project outcome:** Papers Published / Accepted.

- a) Nikhat M, Haque MM and Luqman A Khan (2009), Pre-steady state kinetics of ATP hydrolysis by Na,K-ATPase, *Cell Biochemistry and Function*, 27, 135-141.
- b) Ojha R, Manzoor N and Luqman A Khan (2009), Ascorbic acid modulates pathogenicity markers of *Candida albicans*, *International Journal of Microbiology Research*, Volume 1, Issue 1, 2009, pp-19-24.
- c) Aijaz Ahmad Amber Khan, Nikhat Manzoor and Luqman A. Khan (2009), Evolution of ergosterol biosynthesis inhibitors as fungicidal against *Candida*, *Microbial Pathogenesis*. 48(1), 35-41.
- d) Amber Khan, Aijaz Ahmad, Nikhat Manzoor and Luqman A. Khan (2010), Antifungal activities of *Ocimum sanctum* essential oil and its Lead molecules, *Natural Products Communications*, 5(2), 345-349.
- e) Ojha R, Prasad R, Manzoor N and Luqman A. Khan (2010), Vitamin-C modulates oxidative stress related enzyme activities in *Candida albicans*, *Turkish Journal of Biochemistry*, 35 (1), 35-40.
- f) K Amber; A Aijaz; X Immaculata, Luqman A Khan and M Nikhat (2010), Anticandidal effect of *Ocimum sanctum* essential oil and its synergy with fluconazole and ketoconazole, *Phytomedicine*, 17, 921-925.
- g) Sheikh Shreaz, Rayees A Sheikh, Bhatia Rimple, Athar Adil Hashmi, Manzoor Nikhat, Luqman A Khan (2010), Anticandidal activity of cinnamaldehyde, its ligand and Ni(II) complex: Effect of increase in ring and side chain, *Microbial pathogenesis*, 49 (3)
- h) Snowber Yousuf, Aijaz Ahmad, Amber Khan, Nikhat Manzoor and Luqman A. Khan (2010), Effect of diallyldisulphide on antioxidant enzyme system in *Candida* Species, *Canadian Journal of Microbiology*, 56 (10), 816-821.
- i) Snowber Yousuf, Aijaz Ahmad, Amber Khan, Nikhat Manzoor, **Luqman** A. Khan. Effect of garlic derived allylsulphides on morphogenesis and hydrolytic enzyme secretion in *Candida albicans*. *Medical Mycology*. DOI: 10.3109/13693786.2010.539629
- j) Neelofar Khan, Sheikh Shreaz, Rimple Bhatia, Sheikh Imran, Sumathi Muralidhar, Nikhat Manzoor, Luqman A. Khan (2011). Anticandidal activity of Curcumin and Methyl Cinnamaldehyde. *Fitoterapia* [doi:10.1016/j.fitote.2011.12.003](https://doi.org/10.1016/j.fitote.2011.12.003).
- k) S. Shreaz, K. Indresh, B. Rimple, K. Neelofar, M. Sumathi, M. Nikhat, K. Ahmad Luqman (2011). Influences of cinnamic aldehydes on plasma membrane H⁺ ATPase activity and ultrastructure of *Candida*. *Journal of Medical Microbiology*. doi:10.1099/jmm.0.036145-0.
- l) S. Shreaz, K. Indresh, B. Rimple, K. Neelofar, M. Sumathi, M. Nikhat, K. Ahmad Luqman (2012). Cinnamic aldehydes effect on hydrolytic enzyme secretion and morphogenesis in oral *Candida* isolates. *Microbial Pathogenesis*, 52, 251-258.

13. Benefit to society:

Candida is an important opportunist pathogen of human. Current line of antifungals have inherent toxicity and organisms are showing increased resistance to them. New plant derived products hold promise as they are less toxic. New target explored in this project may pave way for development of new and more effective fungal with less toxicity.

Faculty of Natural Sciences

Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Understanding the Effectiveness of Chemical Chaperones in Preventing Serine Protease Inhibitors Polymerization.
3. **Project Investigator:** Mohammad Aman Jairajpuri, Professor, Department of Biosciences, Jamia Millia Islamia.
4. **Co-Investigator:** None.
5. **Funding Agency:** Department of Biotechnology (DBT)
6. **Amount Funded:** INR 12,18,000.
7. **Duration of Project:** 3 years.
8. **Starting and completion date of the Project:** June 11, 2008-December 31, 2012
9. **Project Objective:**

Polymerization of serpins leads to a series of pathological disorders in human like emphysema, cirrhosis, thrombosis and angioedema, with no available cure. The aim of this project was to identify small molecule leads that can hinder/retard polymerization of serpins.
10. **A brief overview of the project:**

The serpins (SERine Proteinase INhibitors) are structurally similar but functionally diverse proteins that fold into a conserved structure and employ a unique suicide substrate-like inhibitory mechanism. Serpin is delicately balanced to perform its function with many critical residues involved in maintaining metastability. However due to its typical mechanism of inhibition, naturally occurring serpin variants produces conformational instability that allows insertion of RCL of one molecule into the β -sheet A of another to form a loop-sheet linkage leading to its polymerization and aggregation. Serpin polymerization is a significant problem and devising a cure has been cumbersome owing to their complex mechanism of inhibition, metastable nature, cofactor binding ability and large scale conformational change. An alternative approach to combat the serpinopathies is the use of chemical chaperones. Studies with chemical chaperones have identified agents like Trimethylamine N-oxide (TMAO) and Phenyl butyric acid (PBA) that prevents misfolding and correct lethal conformation of Z-antitrypsin by influencing protein folding environment inside the cell. Similarly glycerol, erythritol and trehalose reduce the rate of polymerization of wild and mutant type neuroserpin that causes the dementia FENIB. The rate of antithrombin polymerization and hyper-coagulation in patients with polymer forming variant of antithrombin that leads to thrombosis. Modifications around trehalose have been done to increase depolymerization efficiency and to check its viability against other serpins.
11. **Infrastructure created from the project:**

Fluorometer (Jasco, Japan).
12. **Project Outcome:**

Research paper	Conferences	Training
5	12	6

13. **Benefit of the Project to the society:**

Understanding the functional and structural basis of polymerization is important to help the rational design of drugs that may lead to the development of novel therapeutic strategies to prevent diseases based on serpin polymerization.

Faculty of Natural Sciences
Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Understanding the Role of Low and High Affinity Heparin Interactions in Modulating Antithrombin Conformations for its Antiangiogenic Function.
3. **Project Investigator:** Mohamad Aman Jairajpuri, Professor, Department of Biosciences,
4. **Co-Investigator:** None.
5. **Funding Agency:** University Grant Commission (UGC)
6. **Amount Funded:** INR 11,18,000.
7. **Duration of Project:** 3 years.
8. **Starting and completion date of the Project:** May 1, 2009-May 1, 2012
9. **Project Objective:**

Antiangiogenic protein is thought to have potential to retard tumor growth. A comparative analysis of several loop inserted and loop exposed conformation of antithrombin in the presence and absence of heparin was done to elucidate the structural differences that give rise to its antiangiogenic potential.

10. **A brief overview of the project:**

Formation of new blood vessel is essential for tumor progression and metastasis and is largely governed by balance between pro and anti-angiogenic factors. Endogenous proteins with specificity for vascular endothelial cells based inhibition of angiogenic activity are thought to be an attractive option for antitumor therapy. However, understanding the underlying mechanism of such specificity and signal transduction involved has been difficult. Antithrombin is a potent inhibitor of the blood coagulation proteases like thrombin and factor Xa. Antithrombin's cleaved and latent forms were shown to have antiangiogenic activity but not its native anticoagulant conformation. Further studies showed critical role of heparin binding in modulating antithrombin antiangiogenic function. However lack of comparative analysis of reactive center loop inserted and exposed antithrombin conformation with known antiangiogenic drugs hinders any meaningful comparison on its anticancer potential. We have done a comparative analysis of RCL inserted (latent, cleaved and polymeric) and RCL exposed (native and oxidized) conformation of antithrombin using CAM, wound healing and circular dichroism analysis in the presence and the absence of heparin. The results are compared with Thalidomide, a marketed antiangiogenic drug and shows that latent and oxidized antithrombin in the presence unfractionated heparin have the most potent antiangiogenic activity. The study confirms the assertion that reduced heparin binding conformation of antithrombin interfere with proangiogenic factors like FGF and VEGF to effect antiangiogenic role. Oxidized antithrombin is identified as a new conformation which is active and not reactive centre loop inserted but is strongly antiangiogenic.

11. **Infrastructure created from the project:**

Plate reader.

12. **Project Outcome:**

Research paper	Conferences	Training
2	6	4

13. **Benefit of the project to the society:**

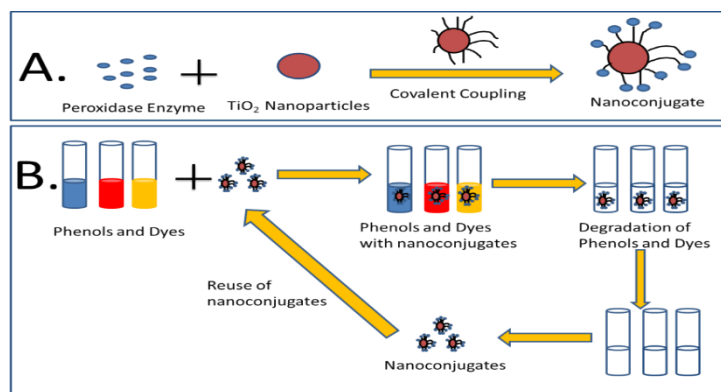
Antiangiogenic drugs specifically targeted to the cancer cells are thought to have potential to retard cancer growth. Endogenous proteins with inherent potential for antiangiogenic function are the leads that can help in the same. Antithrombin is a coagulation inhibitor but it also has a potent antiangiogenic ability and retards tumor growth in vivo. Understanding the molecular basis of antithrombin in its antiangiogenic role is central to its design and targeting and inhibition of cancer cell growth.

Faculty of Natural Sciences
Department of Bioscience

1. **Name of Department:** Department of Bioscience.
2. **Project Title:** Peroxidase conjugates of TiO₂ nanoparticles for the removal of phenols and dyes in waste water.
3. **Project Investigator:** Dr. Meryam Sardar, Associate Prof. Department of Biosciences.
4. **Co-Investigator:** None
5. **Funding Agency:** UGC
6. **Amount Funded:** INR 13,39,183/-
7. **Duration of the Project:** 2009-2012 (3 years)
8. **Starting and completion date of the Project:** May 01, 2009-April 30, 2012.
9. **Project Objectives:**
 - a) Purification of Peroxidase from Bitter gourd.
 - b) Immobilization of Peroxidase on TiO₂ nanoparticles.
 - c) Biochemical characterization of the immobilized enzyme. The biocatalyst will be characterized in terms of catalytic efficiency and kinetic parameters.
 - d) Determination of operational and thermal stability of the bioconjugate.
 - e) Structural studies of the Peroxidase - TiO₂bioconjugate.
 - f) Removal of phenols and decolorization of toxic dyes using Peroxidase - TiO₂bioconjugate.
10. **A brief overview of the project:**

Peroxidase isolated from Bitter gourd was covalently immobilized on TiO₂ nanoparticles (<25 nm) after activation with aminopropyltriethoxysilane. The resulted bioactive nanoconjugates were used to remove phenol and dye from aqueous solutions. The immobilized enzyme showed 83% activity as compared to the equivalent free bitter gourd peroxidase enzyme. The immobilized enzymes have a higher V_{max}/K_m (166.7) as compared to the free enzyme (100). It also showed enhanced thermal stability at 60°C comparing to its soluble counterpart. The enzyme stability was also studied in presence of urea and SDS. The nano conjugate retain more activity as compared to the soluble counterpart.

The immobilized enzyme demonstrated high removal of phenols from aqueous solutions, even at high temperature of 60°C, 70% of the phenol was removed using 50 units of the immobilized enzyme. The nanobioconjugate could be reused four times without any loss in enzyme activity. The immobilized enzyme also removes dyes and their mixture from aqueous solutions. The presence of enzyme on TiO₂ nanoparticles was confirmed by SEM (Scanning Electron Microscopy) and FTIR (Fourier transform infrared spectroscopy).



11. Infrastructure created from the Project:

Instruments obtained:

- i) Double Beam Spectrophotometer
- ii) Electrophoresis unit

12. Project Outcomes:

One phd`

Research paper	Conferences	Training
4	3	4

13. Benefit from the project to the society:

Most currently existing processes to treat industrial wastewater are ineffective and not economical. There is a need to find alternative treatments that are effective in removing dyes/phenols from large volumes of effluents and are low in cost. Thus, a rapid, cost-effective, ecologically responsible method of cleanup is described which can be used at large scale.

Faculty of Natural Sciences

Department of Bioscience

1. **Name of the Department:** Department of Biosciences
2. **Project Title:** Analysis of Structural and Mechanistic Basis of Novel Anthithrombin variants in Indian Families with Thrombosis
3. **PI:** Dr. Md Aman Jairajpuri
4. **Co-PI:** Renu Saxena, M. Mahapatra, AIIMS, New-Delhi
5. **Funding Agency:** ICMR
6. **Amount funded:** INR. 23,00,000.
7. **Duration of the project:** 3 years 6 months
8. **Starting and compilation date of the project:** 29/3/2011-29/9/2014
9. **Project Objective:**

Antithrombin III (AT) is the main inhibitor of blood coagulation proteases like thrombin and factor Xa. The present study reports the identification and characterization of several variants of AT for the first time in Indian population.

We screened 1950 deep vein thrombosis (DVT) patients for AT activity and antigen levels, DNA sequencing was further carried out to identify known and unknown genetic variations in the AT gene. About 10% patients were shown to have DVT because of low levels of Protein C and 8.7% (170) had low protein S levels. An antithrombin based testing identified 1.38% (27) patients with low antithrombin III levels.

10. A brief overview:

Normal plasma antithrombin level in adult patients is in the range of 80-120%. Patients with inherited AT deficiency typically have levels in the 40%-60 % range. Two families, one with type I and the other with type II AT deficiency were identified. Three members of family I with low AT activity and antigen levels showed increased coagulation rates, and rs2227589 polymorphism was identified as the sole factor responsible for recurrent thrombosis.

Four members of family II spanning two generations had normal antigen levels but decreased AT activity. A novel single nucleotide insertion, g.13362_13363insA in this family in addition to g.2603T>C (p.R47C) mutation were identified as the cause of DVT. AT purified from patient's plasma on hi-trap heparin column showed a marked decrease in heparin affinity and thrombin inhibition rates.

Western blot analysis showed presence of aggregated AT. We also report a novel point mutation at position g.7549 A>G (p.T280A), highly conserved in serpin family. Further, variant protein isolated from patient plasma indicated that loss of regulatory function was due to *in-vivo* polymerization.

In conclusion this is the first report of AT mutations in SERPINC1 gene in Indo-Aryan population where a novel point mutation p.T280A and a novel single nucleotide insertion g.13362_13363insA are reported in addition to known variants p.R47C, p.C4-X and polymorphisms rs2227598, *Pst*I and *Dde*I.

Faculty of Natural Sciences Department of Bioscience

1. **Name of the Department:** Department of Biosciences
2. **Project Title:** Apoptosis and Pathogenicity Modulation in *Candida albicans* by Curcumin and lead molecules of Tulsi Essential Oil
3. **Project Investigator:** Dr Nikhat Manzoor



4. **Co-Investigators:** Dr. Imaculata Xess, Department of Microbiology, AIIMS
Dr. Luqman A. Khan, Department of Biosciences, Jamia Millia Islamia
5. **Funding Agency:** ICMR
6. **Amount Funded:** Rs 29,03,026/-
7. **Duration of the Project:** 3 years
8. **Starting date of the project:** 27th March 2010
9. **Project Objectives:**
 - Evaluation of inhibitory activity of Curcumin and essential oil of *Ocimum sanctum* and its active constituents (Eugenol, Linalool, Carvacrol, Cineole, and Methyl Chavicol) on standard and resistant strains of *C. albicans* and to study its synergistic effect along with conventional antifungal drugs on the growth and viability of this opportunistic fungal pathogen.
 - To study the effect of these compounds on yeast dimorphism and related pathogenicity markers.
 - To study the role of PM-ATPase in virulence by studying the H⁺ ATPase mediated events of H⁺ efflux and intracellular pH in the presence of these compounds.
 - To determine the mode of cell death (apoptotic/necrotic) in *C. albicans*
10. **Brief overview of the Project:**

Candida albicans is an opportunistic human fungal pathogen which causes disease mainly in immunocompromised patients. This work evaluates the anti-*Candida* activity of Curcumin and *Ocimum sanctum* essential oil and its major constituents at MIC and sub-MIC concentrations. The test compounds had a significant inhibitory effect on virulence factors like secretion of hydrolytic enzymes, morphologic transition and PM-ATPase activity. Manipulation of endogenous responses during programmed cell death in fungi can lead to development of effective therapeutic strategies. Apoptotic cell death was observed at low concentrations while necrosis at higher concentrations. Necrotic cells displayed reduced TUNEL staining and inability

to exclude propidium iodide. In addition, they lacked a defined nucleus and an intact external morphology. Exposed cells were TUNEL-positive, showed chromatin condensation and margination, nuclear envelope separation, nuclear fragmentation, cytoplasmic shrinkage and plasma membrane blebbing. The primary involvement of cytochrome c release in apoptosis was eliminated. The present study throws light on the mode of antifungal action of these and other natural products.

11. Infrastructure created from the project:

Equipment procured: Laminar Flow and Fluorescent Attachment to Inverted Microscope (Motic)

12. Project Outcome:

Manpower trained on the project: 1SRF, 3 PhDs awarded

Research Papers published: 13

Khan A, Ahmad A, Khan L A and Manzoor N "Ocimum sanctum (L.) essential oil and its lead molecules induce apoptosis in *Candida albicans*" Research in Microbiology doi.org/10.1016/j.resmic.2014.05. (2014)

Khan A, Ahmad A, Xess I, Khan L A and Manzoor N "Ocimum sanctum essential oil inhibits virulence attributes in *Candida albicans*" Phytomedicine 21:448-452 (2014).

Ahmad A, Khan A and Manzoor N "Reversal of efflux mediated antifungal resistance underlies synergistic activity of two monoterpenes with fluconazole" European Journal of Pharmaceutical Sciences. 48:80-86 (2013)

Khan N, Shreaz S, Bhatia R, Ahmad SI, Muralidhar S, Manzoor N, Khan LA. Anticandidal activity of curcumin and methyl cinnamaldehyde. Fitoterapia. 83(3) 434–440 (2012)

Khan N, Sheikh S, Bhatia R, S. Muralidhar, Manzoor N, Khan L A "Curcumin as a promising antifungal of clinical interest". Canadian Journal of Microbiology. 57:204-210 (2011).

Khan A, Ahmad A, Akhtar F, Yousuf S, Xess I, Khan L A and Manzoor N "Induction of oxidative stress as a possible mechanism of antifungal action of Three Phenylpropanoids" FEMS-Yeast Research 11:114-122 (2011).

Ahmad A, Khan A, Akhtar F, Yousuf S, Xess I, Khan L A and Manzoor N "Fungicidal activity of thymol and carvacrol by disrupting ergosterol biosynthesis and membrane integrity against *Candida*" European Journal of Clinical Microbiology & Infectious Diseases. 30 (1) 41-50 (2011)

Khan A, Ahmad A, Akhtar F, Yousuf S, Xess I, Khan L A and Manzoor N “*Ocimum sanctum* essential oil and its active principles exert their antifungal activity by disrupting ergosterol biosynthesis and membrane integrity” Research in Microbiology. 161:816-823(2010)

Ahmad A, Khan A, Yousuf S, Khan L A and Manzoor N “Proton translocating ATPase mediated fungicidal activity of eugenol and thymol”. Fitoterapia. 81(8):1157-1162 (2010).

Ahmad A, Khan A, Khan L A and Manzoor N “In vitro synergy of eugenol and methyl eugenol with fluconazole against clinical *Candida* isolates” Journal of Medical Microbiology 59: 1178-1184 (2010)

Khan A, Ahmad A, Immaculata X, Khan L A and Manzoor N “Anticandidal effect of *Ocimum sanctum* Essential Oil and its synergy with fluconazole and ketoconazole” Phytomedicine 17: 921-925 (2010).

Khan A, Ahmad A, Manzoor N and Khan L A “Antifungal activities of *Ocimum sanctum* Essential Oil and its Lead Molecules” Natural Products Communications 5 (2) 345-349 (2010).

Ahmad A, Khan A, Manzoor N and Khan L A “Evolution of Ergosterol Biosynthesis Inhibitors as Fungicidal against *Candida*” Microbial Pathogenesis. 48:35-41(2010).

13. Benefit from the project to society:

The present study will help in the development of novel antifungals that are natural, non- toxic, cheaper and will also work against drug resistant fungal pathogens that are difficult to treat with conventional drugs.

Faculty of Natural Sciences Department of Bioscience

1. **Name of the Department:** Department of Bioscience
2. **Project Title:** Effect of abiotic stresses on the Expression of different micro RNA-targeted transcription factors in Rice
3. **PI:** Dr. Qazi Mohd Rizwanul Haq



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 10,69,000
7. **Duration of the Project:** 3 years
8. **Starting and completion date of the Project:** February 01, 2011 - January 31, 2014.
9. **Project Objectives:**
 - a) Designing of primers for miRNA targeted TFs for rice.
 - b) Exposure of rice plants to abiotic (drought/ salinity) stress condition.
 - c) Isolation of total RNA from plants tissues under different stress conditions.
 - d) cDNA synthesis and reverse transcription-PCR of the genes selected.
 - e) Sequencing of the RT-PCR amplified products.
 - f) Analysis of the data using advanced bioinformatics tool.
10. **A brief overview of the project:**

Rice is the second largest produced cereal in the world and used as a primary source of food for more than half of the global population. Abiotic and biotic stresses adversely affect the growth and are major constraints in rice production. Plants cope up with stresses using several molecular and biological processes in which transcription factors (TFs) are reported to be involved. The transcription factor exert their activity by binding to certain *cis* DNA elements and consequently either up regulate or down regulate the target expression. Transcription factors in turns are controlled by miRNAs.

In this study, 12 miRNAs were selected that have role in plant development and environmental responses. The levels of transcripts were monitored in terms of expression of different genes under stress for different time intervals. Expression of selected miRNAs (miRNA156, miRNA159, miRNA160, miRNA162, miRNA164, miRNA166, miRNA168, miRNA169, miRNA171, miRNA172, miRNA393 and miRNA396) were checked by stem loop semi-quantitative RT PCR. Successful amplification of miRNA targeted TFs SBP, MYB, ARF, NAC, SCL, GRF, HD ZIP, bHLH, AP2 and corresponding miRNA were achieved. The sequencing of the PCR product and analysis of sequence data revealed a high homology (>90%) with their parent

sequence of TFs genes. Sequences of stem loop PCR product of selected miRNA showed close resemblance with respective rice miRNA families. A perfect positive or negative co-relation could not be established in the expression of miRNA and their target transcription factors. When compared with other miRNAs, miRNA169 showed very fine tune of expression and was up regulated during both drought and salt stress. The information generated from this research and further exploration of other miRNAs and their targeted TFs could be utilized to develop transgenic rice better adapted to survive under abiotic stress.

11. **Infrastructure created from the Project:**

Instruments obtained:

- i) Refrigerated Centrifuge (Remi C-30BL)
- ii) UV Transilluminator (Merck Genei)
- iii) Electrophoresis Unit with Power Pack (Merck Genei)

12. **Project Outcomes:**

One Ph.D. (Thesis Submitted)

Research paper	Conferences	Training
1 (Manuscript Under preparation)	1	4

13. **Benefit from the project to the society:**

Improper water management and the effect of continuously increasing threat of global warming would consequently increase the concentration of salts in the soil leading to abiotic stress on plants. The study helps to understand more about the molecular physiology of rice plants under such stress conditions. This information could be utilized in developing strategies for management crop losses due to abiotic stress.

Faculty of Natural Sciences Department of Biotechnology

1. **Name of the Department:** Department of Biotechnology
2. **Project Title:** Molecular characterization of Nef gene in HIV-1 infected rapid progressors and long-term nonprogressor in north Indian population.
3. **Principal Investigator:** Dr. Mohammad Husain



4. **Co-Investigator:** Dr. Charoo Hans, MD, RML Hospital, New Delhi
5. **Funding Agency:** UGC
6. **Amount Funded:** INR 10, 51, 800/-
7. **Duration of the Projects:** 3 years
8. **Starting & Completion date of the Project:** February 1, 2010- January 31, 2013.
9. **Project Objectives:**
 - a) Selection of rapid progressors and long-term nonprogressors based on available clinical/laboratory data.
 - b) Amplification of HIV-1 Nef gene from rapid progressor and long-term nonprogressors using PCR
 - c) Genotypic analysis of Nef sequences obtained from rapid progressors and long-term on progressors including comprehensive data analysis *in silico*.
10. **A brief overview of the Project:**

The Nef gene is reported to play an important role in HIV disease progression. It is also reported that clinical manifestation of HIV disease varies among the patients. Those who develop disease within 5 years of acquiring HIV-1 infection are known as rapid progressors while some others remain asymptomatic comparatively for a longer period of time, which may be 10 years or more after HIV-1 infection. This latter group is termed as long-term nonprogressors. There may be several factors for this difference in disease progression but the reasons and rationales are unclear. In this study, we analysed viral populations obtained from these two groups of patients to understand the difference in the Nef gene of HIV-1 to determine its role in disease progression
11. **Infrastructure created:**

A laboratory to carry out work on molecular biology and HIV was designed and some key equipment such as autoclave, fridges, PCR machine and some small instruments were purchased to create working conditions for research scholars and Ph.D. students to conduct the study.
12. **Project outcomes:**

The Nef gene revealed some specific changes in key amino acids positions, which are known as functional motifs. Some of these changes are reported to lessen the viral infectivity while some other novel changes need further confirmation to confer their role in decreasing virulence and thus delaying the disease progression.

13. [Benefits from the project:](#)

The study may provide information in developing therapies by targeting Nef gene and therefore, delaying disease progression. This may help patients not only to prolong their life span but also to have an improved quality of life.

14. [Any other information you may think is important in this regard:](#) --

Faculty of Natural Sciences

Department of Biotechnology

1. **Name of the Department:** Department of Biotechnology, Jamia Millia Islamia.
2. **Project Title:** Molecular analysis of p21 gene in Indian female breast cancer patients.
3. **Project Investigator:** Dr. Syed Akhtar Husain
4. **Co-Investigator:** Professor Nootan Kumar Shukla, Professor and Head Department of Surgical Oncology, BRA, IRCH, AIIMS, New Delhi.
5. **Funding Agency:** University Grants Commission (UGC)
6. **Amount funded:** INR 9.13 lakhs.
7. **Duration of the project:** Three years
8. **Starting date of the project:** February 01, 2009 to January 31, 2012.
9. **Project objectives:**
 - a) To find out mutation in p21 gene using single stranded confirmation polymorphism (SSCP) and automated DNA sequencing.
 - b) To evaluate the 5'CpG methylation analysis of promoter region of p21 gene using MSP (methylation specific PCR)
 - c) To elucidate the expression of p21 protein using Immunohistochemistry.
 - d) To co-relate the above parameters with clinic-pathological variables of breast cancer, if possible.
10. **A brief overview:**

The p21 gene, downstream effectors of the p53 tumour suppressor gene is involved in breast carcinogenesis and in other malignancies. The mutation and hyper-methylation profile of p21 gene in the north Indian population revealed that they are associated with breast cancer development and progression. Genetic and epigenetic modifications of p21 gene led to its complete inactivation and the eventual development of breast carcinoma. The epigenetic modification of the p21 gene is an important clinical discovery because of possible reverse epigenetic changes restoration of the cells gene function. P21 can thus be targeted for therapeutic intervention in addition to its utility as a diagnostic and prognostic marker. Future studies should however involve larger cohorts and longer follow –up periods.
11. **Infrastructure created from the project:**

Gradient PCR –Biorad
Gel-doc system –Biorad
12. **Project outcomes:**
 - a) Akhter M, Akhtar MS, Ahmad MM, Haque S, Siddiqui S, Hasan SI, Shukla NK, Husain SA (2014) Association of mutation and hypermethylation of p21 gene with susceptibility to breast cancer: a study from North Indian. Mol Biol Report DOI 10. 1007/s 110033-014-3150
13. **Benefits from the project to the society:**

P21 can thus be targeted for therapeutic intervention in addition to its utility as a diagnostic and prognostic marker. Future studies should however involve larger cohorts and longer follow –up periods.

Faculty of Natural Sciences

Department of Biotechnology

1. **Name of the Department:** Department of Biotechnology
2. **Project Title:** Investigation of Anti-HIV Potential of Some Herbal plants Adhatoda Vasica, Boerhaavia diffusa, Cephalandra Indica and nardostachys Jatamansi from Indian Subcontinent
3. **PI:** Dr. Mohammad Hussain



4. **Co-PI:** Nil
5. **Funding Agency:** CCRUM
6. **Amount funded:** INR. 26,00,000, (Amount Released INR. 9 lacs)
7. **Duration of the Project:** 3yr
8. **Starting & Completion date of the Project:** 15.06.2010 to 14.06.2013
Since further funds from CCRUM for all extramural projects were halted due to the non availability of funds from Ministry of Health & Family Welfare, Department of AYUSH, New Delhi, this project is held and would restart as soon as fund are made available
9. **Project objective:**
 - (1) Collection of Plant material, its identification and authentication.
 - (2) Preparation of successive and individual extracts of different parts of medicinal plants.
 - (3) Screening of plants extracts for anti-HIV-1 activities
 - (4) Standardization and quality control of active plant extracts for:
 - Phytochemical screening
 - Assay of total phyto-constituents
 - HPTLC/HPLC fingerprinting
 - Quantification of marker compounds (at least one in each bioactive extract using HPTLC/HPLC)
 - (5) Bioactivity guided fractionation of active plant extracts
 - (6) Screening for anti-HIV-1 activities of bioactivity guided fractions.
 - (7) Determine the safety of the identified compounds for normal cells.
10. **A brief overview of the Project:**

Global efforts against HIV and AIDS have resulted in significant reduction in number of deaths by AIDS with the administration of antiretroviral therapy mostly referred as highly active antiretroviral therapy (HAART) that includes combination of several drugs. However, the incidence of side effects and HIV drug resistance in patients under HAART is considerably high and thus HIV/AIDS persists as a major cause of morbidity in western societies and continues to surge unabated in developing world. Consequently, there remains an urgent need for more potent and conceptually novel antiviral therapeutics to add to current treatment regimens. Some efforts have been

directed to investigate plant based formulations to treat AIDS. Nevertheless, more focussed efforts are required to Indian plants to explore their anti-HIV properties. In the present proposal, we proposed to screen, identify and characterize novel compounds with anti-HIV properties from various medicinal plants that have been reported to be beneficial in combating sexually transmitted infections including viral infections, and have been used for decades by physicians practicing Ayurvedic and Unani System of Medicine. The identification of anti-HIV compounds from various Indian medicinal plants will be the first step for effective plant based formulations that may provide a better option to treat AIDS patients.

11. **Infrastructure created:**

A laboratory to carry out work on molecular biology and HIV was designed and some key equipment such as biosafety cabinet for processing HIV samples, autoclave, double distillation plant and some small instruments were purchased to create working conditions for research scholars and Ph.D. students to conduct the study.

12. **Project outcomes:**

The authenticated plants were obtained and further identification was obtained from NISCAIR. Extracts from various plant parts were through standard established procedures. The plant extracts were used for cytotoxicity by making a solution in DMSO about 500 µg per ml. The cytotoxicity assay were performed by serial dilution on Human T cell lines (MT2 and NOMI cells) using MTT assay. Once IC₅₀ value of each extract was determined, an appropriate dose was calculated to be used for anti-HIV activity. Due to non availability of further funds, the work remains pending to conduct further experiments.

13. **Benefits from the project:**

The findings are beneficial in that except *Nardostachys jatamansi*, all other extracts from other plants showed very little toxicity on T Cell lines. These extracts might prove quite useful in inhibiting HIV replication, which could be measured by p24 ELISA, RT assay and HIV constructs that have GFP as reporter gene where HIV replication transactivates GFP expression that can be measured through fluorescent microscopy.

14. **Any other information:** No

Faculty of Natural Sciences
Department of Biotechnology

1. **Name of the Department:** Department of Biotechnology
2. **Project Title:** Molecular Characterization of Reverse Transcriptase and Integrase Genes of HIV-1 from Patients Non Responsive to Anti -Retroviral Therapy (Art)
3. **PI:** Dr. Mohammad Hussain



4. **Co-PI:** Dr. Suresh Kumar, MD, Professor, Department of Medicine, Maulana Azad Medical College, New Delhi
5. **Funding Agency:** CSIR
6. **Amount funded:** INR. 19,72,038
7. **Duration of the Project:** 3yr
8. **Starting & Completion date of the Project:** 01/05/2011 to 30/04/2014
9. **Project objective:**
 - 1) Clinical evaluation of HIV-1 infected patients non-responsive and responsive to ART.
 - (2) Analysis of reverse transcriptase and integrase genes from HIV-1 patients not responding to ART.
 - (3) Analysis of reverse transcriptase and integrase genes from HIV-1 naive and ART responding Patients
 - (4) Identification of resistance pattern by sequence analysis using computer software programs.
10. **A brief overview of the Project:**

Since major target to anti-retroviral drugs is reverse transcriptase and more recently integrase too, therefore, in this study we proposed to characterize reverse transcriptase (RT) and integrase (IN) genes to find mutations in subtype C and other subtypes present in Indian patients who are receiving antiretroviral therapy but are non responsive to these drugs. Identifying the relevant drug resistance mutations among subtype C and other circulating subtypes would facilitate interpreting genetic resistance among patients who are non responsive to antiretroviral therapy. The study would answer two key questions, i.e. (i) Do the mutations responsible for drug resistance in subtype B viruses also develop in subtype C viruses, a major circulating subtype in Indian patients? (ii) Do novel mutations emerge in subtype C viruses during antiretroviral drug failure that are not recognized in subtype B viruses?
11. **Infrastructure created:**

A laboratory to carry out work on molecular biology and HIV was designed and some key equipments such as table top centrifuge, shaking water bath, fridge, and some

small instruments were purchased to create working conditions for research scholars and Ph.D. students to conduct the study.

12. **Project outcomes:**

The major NRTI mutations in nonresponsive patients were TAM-mutations in about 33% patients while non_TAM mutations were approximately 20% of them. In responsive patients non-TAM mutations were observed in 6% of patients. Some mutations in integrase gene were also observed but it is difficult to correlate to the specific integrase inhibitors because mostly they are not part of ART drug regimen among Indian patients.

13. **Benefits from the project:**

In the present study, both major and minor mutations against reverse transcriptase inhibitor were observed, however, some novel mutations too were observed in nonresponsive patients, which need further characterization. We observed that viral load testing is always a better and highly reliable parameter in monitoring antiretroviral therapy than only CD4 count. It was also noted that it was difficult for clinicians to formulate an optimum drug regimen for patients who harbour transmitted drug resistance in the absence of genotyping testing. Lack of adherence and drug toxicity need to be tackled with each patients individually.

14. **Any other information:** No

Faculty of Natural Sciences Department of Biotechnology

1. **Name of the Department:** Department of Biotechnology
2. **Project Title:** To motivate and promote the culture of research at undergraduate level
3. **PI:** Head of the department
4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 5,00,000
7. **Duration of the project:** 03 Years
8. **Starting date of the project and date of completion of project:** November 2009
9. **Project Objective:**
To motivate and promote the culture of research at the undergraduate level
10. **A brief overview:**

For biotechnology students, research is a prime option as their career. It was felt that students get exposure to professional research at Master course only while undergoing short-term training. For a research-oriented course such as B.Sc. Biotechnology, this project was proposed and considered by UGC, Government of India with an objective to motivate and promote the culture of research at the undergraduate level. The selected students were exposure to advance research fields of Biotechnology besides providing each selected students with Rs. 3000/- stipend and 1000/- contingency as scholarship. Following were the students and their respective research topics:

Name	Title
Ajeet Singh	Medicine development for HIV
Aqsa Nomani	Effect of siRNA on RSV virus
Faraz Shaheed	Telomere and telomerase in cancer: ALT (Alternative Lengthening of Telomeres)
Farkhanda Ashfaq	To shut down the cells ability to breath as the mtb is highly aerobic
Huma Qasimi	X protein of Hepatitis B virus and its role as a carcinogen
Manju	Targeted nanomedicines
Mohd. Saif	Effect of miRNA on E1A gene
Mohd. Wasif Khan	Cancer therapy using monoclonal antibody
Nilesh Kumar Sharma	Treatment of cancer using DNA damage pathway
Priyanka Singh	Study of new strategies to fight against antibiotic resistant

	bacteria MRSA (Methicillin Resistant-Staphylococcus aureus)
Romana Parveen	To induce apoptosis in cancer cells using microRNAs
Shafiya Razavi	Genotoxic effect of antineoplastic drugs
Shahbaz Khan	Role of p53 in cancer control/treatment
Shazia Parveen	miRNA and diseases
Sheeba Naaz	Antiviral action of silver nanoparticles against HIV-1 and HIV-2
Sumaira Tayyeba	MicroRNAs as oncogenes and tumor suppressors
Syed Yusuf Mian	RNA interference
Uzma Parveen	Transgenic crops
Zia Tariq	Use of gene therapy for cancer treatment
Zoheb Ahmed	Protein promiscuity

11. **Infrastructure created from the project:**

Fully Automated Autoclave for M.Sc. and B. Sc. laboratories

12. **Project outcomes:**

The students successfully completed assigned projects and exposed to hands-on wet lab exercises. This batch at UG level proved to be the most successful batch as reflected by the selection of scholarship recipients. Some of recipients were among the toppers of JAM entrance and hence got admission in IITs, JNU, AIIMS, etc. The project certainly made that batch distinct from others by generating research temperament at a young age and early stage of career.

13. **Benefits from the project to the society:**

Manpower in biotechnology was generated

20 UG students were exposed to advance research field and got overwhelming hike in their research temperament which gifted them with better opportunities in their life, helping to improve social status besides professional.

14. **Any other information:** NIL

Faculty of Natural Sciences
Department of Biotechnology

1. **Name of the Department:** Department of Bioscience
2. **Project Title:** Cellular/molecular mechanisms involved for arsenic detoxification and tolerance in rice and Indian mustard varities
3. **PI:** Dr. Meetu Gupta



4. **Co-PI:** Nil
5. **Funding Agency:** Ministry of Environment and forest
6. **Amount funded:** INR. 24,83,293
7. **Duration of the Project:** 3yr 6month
8. **Starting & Completion date of the Project:** Dec-2009 to June-2013
9. **Project objectives:**

The project was planned with the following objectives, to be achieved in three and a half years of the project tenure:

1. Study of apparent toxicity symptoms under As stress including seed germination, root- shoot length along with some basic physiological parameters (chlorophyll, protein etc.)
2. The accumulation pattern of arsenic (arsenate and arsenite) in rice and mustard varieties at different time intervals.
3. Changes in enzyme activities (antioxidant enzymes, ascorbate related enzymes etc..)
4. Induction and suppression of proteins in arsenic sequestration.
5. Transcript profiles of genes related with metal binding peptides under arsenic stress.
6. 2D analysis of proteins under As stress

10. **A brief overview:**

Arsenic (As) is a toxic element found ubiquitously in the environment and in organisms. It is classified as a metalloid having properties of both metals and non-metals, and can undergo a wide range of chemical interactions. Arsenite [As(III)O] and arsenate [As(V)O] are the major forms of As intoxication and these anions are readily taken up by the plants. Both the anions affects plant growth, development and limiting successful plants distribution and crop production. Bioavailability, uptake and phyto-toxicity of arsenic to plants are influenced by factors such as arsenic concentration in soil/water, arsenic species, plants species and soil/.water properties. In order to devise new strategies for arsenic detoxification and thus

improved tolerance by plant species, it is important to understand the behaviour of arsenic species in the soil-water-plant environment.

The major goal of this study was to evaluate the differential response of As species in two varieties of *Brassica juncea* (Indian Mustard) and *Oryza sativa* (Rice) as *Brassica* is known as good metal accumulator and rice is the main staple food in As contaminated areas. With this goal, experiments were designed to see the responses of different varieties of both plants at physiological, biochemical and molecular level. The varietal differences may help in the selection of tolerant and susceptible variety under arsenic stress and for better phytoremediation strategies.

11. **Infrastructure created from the project:** Spectrophotometer, Balance, Double door Refrigerator, pH meter, Autoclave, Electrophoresis units (protein/DNA), Centrifuge, Vortex, A.C., Microwave & Pipettes

12. **Project outcomes**

Papers published	Papers presented in Conferences
<p>1. Mohd. Anwar Ahmad, Rashmi Gaur and Meetu Gupta (2012) Comparative biochemical and RAPD analysis in two varieties of rice (<i>Oryza sativa</i>) under arsenic stress by using various biomarkers. Journal of Hazardous Material 217-218, 141-148, [IF: 4.3]</p> <p>2. Meetu Gupta and Mohd. Anwar Ahmad (2013) Exposure of <i>Brassica juncea</i> (L.) to arsenic species in hydroponic medium: comparative analysis in accumulation and biochemical and transcriptional alterations. Environmental Science and Pollution Research. 135-013-1632-Y [IF: 2.87]</p> <p>Meetu Gupta and Mohd. Anwar Ahmad (2014) Arsenate induced differential response in rice genotypes. Ecotoxicology and Environmental Safety. 107, 46-54. [IF: 2.48]</p>	<p>1. Mohd. Anwar Ahmad, Shikha Gupta, Rashmi Gaur and Meetu Gupta (2010) <i>Genetic Diversity and arsenic tolerance in two varieties of Rice (Oryza sativa L.)</i>. Paper presented in 12th Annual conference of Society of Science and Environment on 'Interdisciplinary Approaches in Environmental Sciences' held by M. S. University, Vadodara from 9th to 10th Oct 2010.</p> <p>2. Mohd. Anwar Ahmad, Rashmi Gaur and Meetu Gupta (2011) <i>Impact of arsenic on mustard (Brassica juncea L.) varieties at molecular and population level using multiple biomarkers</i>. Poster presented in 80th Annual Meeting of the Society of Biological Chemists. Held by CIMAP, Lucknow, India from 12-15 Nov 2011.</p> <p>3. Mohd. Anwar Ahmad, Chandana Pandey, Meetu Gupta. (2012) <i>Exposure of Brassica juncea (L.) to arsenic species in hydroponic medium: comparative analysis in accumulation,</i></p>

	<i>biochemical and transcriptional alterations.</i> Paper presented in “81th annual meeting of the Society of Biological Chemists (SBC)” November 9-11, 2012 at Science City Auditorium Complex, Kolkata, India
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13. Benefit from the project to the society

Opposite patterns of response to Arsenic species in *Brassica* and *Oryza* varieties were obtained as judged by enhanced activities of antioxidative enzymes, stress related parameters and metal tolerant genes along with some basic toxicity parameters. Better As stress tolerance in Pusa Bold (mustard) and Pusa Basmati (rice) variety was associated with its ability to maintain higher induced activities of stress indicators and modulators parameters along with more transcript accumulation of metal tolerant genes.

Overall, Pusa Bold variety of Indian mustard and Pusa Basmati1 variety of rice was selected as arsenic tolerant plants, with higher accumulation pattern and tolerance towards arsenic toxicity. However, further research is needed to identify more candidate genes and markers linked to As(III) and As(V) tolerance which would help to improve the tolerance of these plant. Substantial capacity of both varieties for As accumulation appear to have potential for remediating moderately As-contaminated soil/water.

14. Any other information you may think is important in this regard

(a) Manpower trained (one JRF and one Lab Attendant)	02
(b) Ph.D. enrolled/Produced out of the Project -	01
(c) Papers presented in International/National Conferences	03
(d) Papers published	03
(e) Manuscript communicated	01

Centre for Physiotherapy and Rehabilitation Sciences

1. **Name of the Department:** Centre for Physiotherapy and Rehabilitation Sciences
2. **Project Title:** Effect of Interferential Therapy and Temperature Manipulation of Sleep Parameters in Human Subjects
3. **PI:** Dr. M Ejaz Hussain



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 7,71,800
7. **Duration of the Project:** 3yr
8. **Starting & completion date of the Project:** 2010-13
9. **Project objective:**

To investigate the cause and effect nature of sleep parameters like EEG, ECG, EMG, EOG etc in Physiotherapeutic intervention mediated sleep induction and maintenance. To investigate Co-relation of signature rhythm markers like core body temperature, melatonin in Physiotherapeutic intervention mediated sleep induction and maintenance. To investigate the underlying mechanism of sleep induction by physiotherapy intervention.

10. **A brief overview:** The incidence of sleeping disorders is alarmingly high with various demographic studies reporting the frequency of incidence at 30% to 50% and being directly related to lifestyle changes, shift work schedules, etc. which have occurred in the last decade. Even with advances in therapy for sleep disorders and recognition that insomnia has significant impact on patient's health and quality of life, the majority of patients with insomnia remain undiagnosed and/or are not treated properly. Besides, pharmacological intervention like sedatives can cause physiological and psychological dependence when taken regularly over a period of time, even at therapeutic doses. There are also serious paradoxical complications with characteristics like depression, with or without suicidal tendencies, phobias, aggressiveness, violent behavior and symptoms sometimes misdiagnosed as psychosis. Even the novel nonbenzodiazepine hypnotics that provide comparable efficacy to benzodiazepines don't offer any significant advantage in terms of adverse effects. Neuroleptic malignant syndrome (NMS) though relatively uncommon side effect but may develop after a recent increase in the therapeutic dose of an antipsychotic medication. Apart from the story of side effects, Many of the currently available agents used to treat insomnia, including the antidepressant trazodone, the non-benzodiazepine hypnotics zolpidem and zaleplon, and some of the benzodiazepines, have not consistently demonstrated effectiveness in promoting

sleep maintenance. Furthermore, the benzodiazepines with established sleep maintenance efficacy are associated with next-day sedation, the risk of tolerance and dependence, or both.

Given the advantage of fewer side effects and long-term effects with non-pharmacological treatments and recommendation to limit (4 weeks) the pharmacological intervention, we propose the study of interferential and temperature manipulations for sleep induction. There have been reports of physical modalities especially thermal manipulations being used in sleep studies for sleep induction with some positive results which have potential for being developed further for treatment and rehabilitation of sleep disorder

Methodology Sample

We are taking a minimum of 10 patients in each group. All study is being conducted as per ethical norms and with the approval of institutional ethical committee, Jamia Millia Islamia and ICMR.

There are three experimental groups

Instruments used

1. Interferential therapy unit with attachments
2. TENS unit with attachments
3. Hydrocolator unit with accessories
4. B.P apparatus
5. Polysomnography machine with accessories (RMS, India)

Sleep laboratory and sleep recording :

Volunteers were subjected to recording of whole night sleep using an RMS Polysomnograph (PSG), which is a software based sleep recording system having EEG, EMG, EOG, ECG and O₂ saturation channels. It gives complete report of the whole night sleep hypnogram and related parameters. Some EEG sample records and set of lab. photographs are attached. We have standardized the sleep recording technique and identification of sleep stages using software as well as by manual method. Analysis of whole night sleep records of 6-8 hrs duration of individual subjects in a frame of 30-60 seconds frame, a very tedious task, is being carried out by special software to analyse various stages of sleep. The quality of sleep will be reflected in terms of delta wave pattern. The effect of Physiotherapy intervention on delta wave pattern will indicate any improvement in sleep quality. Since we are in midway of our study, a meaningful data may not be appropriate to present or to draw any inference. We will present it upon completion of the work. I expect by mid next year 2012, we will be able to complete the work and go on for data analysis

11. Infrastructure created from the project:

One Polysomnograph Machine was procured in the Centre

12. Project Outcome:

Sr. No.	Author List	Year	Title of the Paper	Full Journal Name	Vol. No. Page No./ DOI No.
1.	Manzar MD, Zannat W, Hussain ME	2014	Sleep and physiological systems: a <i>functional perspective</i>	Biological Rhythm Research	In press
2.	Manzar MD,	2014	Lack of awareness and	Indian Journal of Science	13(1): 7-10

	Hussain ME		apathy to sleep health issues	Communication	
3.	Z Veqar, JA Moiz, ME Hussain	2014	Psychometric analysis of the Pittsburgh insomnia rating scale among university population of poor sleepers in India	North American Journal of Medical Sciences	6(4):161–167/ 10.4103/1947-2714.131238
4.	Manzar MD, Zannat W, Kaur M, Hussain ME	2014	Sleep in university students across years of university education and gender influences	International Journal of Adolescent Medicine and Health	In press
5.	D Manzar, UA Hameed, M Sethi and Hussain ME	2013	Heart rate variability in delayed sleep phase syndrome	Indian Journal of Applied Basic Medical Sciences	15 (21): 32-36
6.	Manzar MD, Hussain ME	2012	Sleep–Immune System Interaction: Advantages and Challenges of Human Sleep Loss Model	Frontiers in neurology	3:2/ 10.3389/fneur.2012.00002
7.	Manzar MD, Sethi M, Hussain ME	2012	Humidity and sleep: a review on thermal aspect	Biological Rhythm Research	43 (4): 439-457/ 10.1080/09291016.2011.597621

13. Benefit from the project to the society:

The association between modern life-style, shift work and sleep disorders is proving to be a vicious circle. Sleep disorders in turn are associated with increased probability of cardiac myopathies, diabetes, obesity, stress etc. Moreover, sleep problems (shift work) have been implicated in stress, lesser productivity, safety (eg. driver's wheel errors), daytime sleepiness etc. The physical modalities in addition to its advantages over pharmacological intervention will help manage the sleep disorder as well as the related disorders.

Centre for Theoretical Physics

1. **Name of the Centre:** Centre for Theoretical Physics
2. **Project Title:** Black Holes and Visible Singularities, Fundamental objects and fundamental theories
3. **PI:** Dr. Sanjay Jhingan



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funding:** INR. 2,00,000
7. **Duration of the Project:** 1year
8. **Starting date of the Project:** 2013
9. **Project objectives:**

The question of end state of gravitational collapse, i.e., the formation of black holes or naked singularities, is one of the most important unsolved problems in classical general relativity. The issue of gravitational collapse assumed a very special significance with the proof of singularity theorems, which showed inevitability of singularity formation during collapse under generic initial conditions. Singularity theorems are considered as one of the most significant result in classical General Relativity. However due to its mathematical nature a thrust in this area had to wait for the discovery of Quasars which made the compact objects like blackholes, neutron stars an astrophysical possibility rather than just theoretical consequence of General Relativity

10. **A brief overview:**

Strong evidence of super-massive blackholes at the core of most of the galaxies and several blackhole candidates in binary stars. An astrophysical blackholes is characterised by only two numbers its mass and angular momentum. This elementary structure allows us to classify blackholes among fundamental objects like elementary particles.

11. **Infrastructure created from the project:**

12. **Project outcomes:**

The catastrophic situation due to singularities which imply breakdown of physics is saved by blackholes as they hide them behind an event horizon. However as was shown by Eardly (numerically) and Christodoulou, Neumann, Joshi and Dwivedi etc. (analytical studies) that once the simplifying assumption of homogeneity is relaxed the collapse leads to the formation of naked singularities. This led to renewed

interest in the problem since it challenges physics in the most fundamental way. Even though classified as a catastrophic the visible singularities do provide us with a unique opportunity to probe strong gravity regime, theory the theory of quantum gravity.

Centre for Theoretical Physics

1. **Name of the Centre:** Centre for Theoretical Physics
2. **Project Title:** Accelerating Universe and its observational signature
3. **PI:** Prof Anjan Ananda Sen



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 5,61,300
7. **Duration of the Project:** 3 year
8. **Starting & Completion date of the Project:** 2008-2011
9. **Project objective:**
 1. Constructing Models for accelerating Universe
 2. Constraining such models with present observational data
10. **A brief overview:**

It is now confirmed that our Universe is currently going through an accelerating expanding phase. This needs a repulsive gravitational effect which contrary to the standard lore of attracting gravity. The Cosmological Constant which was first introduced by Einstein way back in 1917 is one of the candidate for explaining this late time acceleration. But the observational data suggest that we may have something which is not exactly Cosmological Constant. In this project we studied models that can have behaviour which are close to cosmological constant but not exactly as cosmological constant. We showed with various observational data coming from both background evolution as well as from the perturbed Universe, that these models are equally allowed by the data.

11. **Infrastructure created:**

With this project, one heavy duty workstation, one laptop as well as one heavy duty network printer have been purchased,

12. [Project Outcomes:](#)

In this project 13 research paper were written all of which were published in International Journal of reposes, e.g Phys.Rev.D, JCAP, Phys.Lett.B, MNRAS etc.

13. [Benefit from the project to the society:](#)

The project deals with some unsolved mysteries in our Universe. How the Universe is evolving, how all the structures are formed; these are the greatest puzzles and are ultimately related to the existence of mankind. The project tried to answer some of these questions. Although the research that has been done has no direct immediate impact to the betterment of the society and mankind, but it certainly enrich the knowledge for our Universe. As a manpower creation, the project also trained one research scholar who got her Phd from JMI and now is working as a Post Doctoral Fellow at the National Observatory in Brazil. The PI has also delivered a number of extension lectures at different college and University to motivate young students to join in research in Astrophysics and Cosmology.

14. [Any Other Information:](#) None.

Centre for Theoretical Physics

1. **Name of the Centre:** Centre for Theoretical Physics
2. **Project Title:** Models of Dark Energy: Theory and Observations
3. **PI:** Prof. M Sami



4. **Co-PI:** Sanjay Jhingan



5. **Funding Agency:** DST
6. **Amount funded:** INR. 17,75,600.
7. **Duration of the project :** 2010-2013
8. **Starting & completion date of the Project:** 08-February-2010 to 07-February-2013
9. **Project objectives:**

To understand the nature of dark energy is one of the most important challenges in cosmology. There are two fundamental questions that need to be explored:

1. Is dark energy density constant with cosmic time?
2. Is gravity modified at large scale?

These questions can be answered by the accurate measurement of the dark energy density $\rho(z)$ as a function of cosmic time or the expansion history of the universe, $H(z)$, and the growth history of the cosmic large scale structure from observational data. The measurement of $H(z)$ allow us to determine whether dark energy is a cosmological constant and study of growth of density perturbations allow us to determine whether gravity is modified or not at cosmic scales. We hope to provide a theoretical understanding of these questions (dark energy and late time cosmic acceleration) from fundamental theories.

10. **A brief overview:**

Acceleration of the expansion of the universe is one of the most exciting and significant discoveries in physics that might revolutionize the theories of quantum physics, gravitation and cosmology. Measurements from type Ia Supernova (SNe Ia), the Cosmic Microwave Background Radiation (CMBR), Large Scale Structure (LSS), weak lensing, clusters and galaxies all contain the imprints of an accelerated universe. The quest to understand the physics responsible for this acceleration

has been one of the major challenges of cosmology. Many cosmological models that can explain this accelerating phase of the expansion are being proposed.

The most commonly discussed models in the literature can be categorized broadly as: (A) Dark Energy Models: These models invoke the existence of an exotic component with negative pressure (dark energy, DE). In these models the unknown form of energy (DE) violating the strong energy condition is postulated. This can be described in terms of equation of state $P = \omega \rho$, where ρ and P are energy density and pressure of dark energy. The simplest candidate for this dark energy is the cosmological constant, Λ , with equation of state $\omega = -1$. The cosmological constant model, however, encounters many theoretical problems such as fine-tuning problem and the coincidence problem. Other models which fall into this category are: Phantom model, evolving scalar field, model with dynamical equation of states, Chaplygin gas etc.

(B) Models that invoke modification of general relativity at cosmological scales (dark gravity). These models consider the breakdown of classical Friedmann equation (FRW model). There are many models that belong to this category: Dvali Gabadadze Porrati model (DGP), Cardassian model, Scalar-tensor gravity, $f(R)$ models, etc.

Cosmologists are living in an interesting era - for the first time in cosmology the tools to check the theoretical models can be devised. With the flood of new data (and the possibility that the observational techniques will be improved), the task ahead is to find viable models of the universe that can explain these observations.

We propose to put observational constraints on the various cosmological models using the following observational tools: Luminosity distance of Type Ia supernovae, Statistics of gravitational lensing, BAO, CMBR, Look back time of old high redshift objects, Age of the universe, X-ray data from galaxy clusters etc. Though some of the tools are well established, the others have to be explored and developed.

11. [Infrastructure created from the project](#): NIL

12. [Project outcomes](#): Research Papers

1. Observational cosmology and the cosmic distance-duality relation

[S Jhingan](#), D Jain, R Nair. Mar 9, 2014. 4 pp.

Published in J.Phys.Conf.Ser. 484 (2014) 012035

ICGC-2011 DOI: 10.1088/1742-6596/484/1/012035

Conference: C11-12-14 Proceedings

e-Print: arXiv:1403.2070 [gr-qc]

[Detailed record](#) - Cited by 1 record

2. Gravitational collapse in pure Lovelock gravity in higher dimensions
Naresh Dadhich (Jamia Millia Islamia & IUCAA, Pune), Sushant G. Ghosh, Sanjay Jhingan (Jamia Millia Islamia). Aug 20, 2013. 9 pp.
 Published in Phys.Rev. D88 (2013) 084024
 DOI: [10.1103/PhysRevD.88.084024](https://doi.org/10.1103/PhysRevD.88.084024) e-Print: [arXiv:1308.4312](https://arxiv.org/abs/1308.4312) [gr-qc]

Detailed record - Cited by 1 record

3. Cosmic distance duality and cosmic transparency
Remya Nair, Sanjay Jhingan (Jamia Millia Islamia), Deepak Jain (Delhi U.). Oct 2012. 14 pp.
 Published in JCAP 1212 (2012) 028
 DOI: [10.1088/1475-7516/2012/12/028](https://doi.org/10.1088/1475-7516/2012/12/028)
 e-Print: [arXiv:1210.2642](https://arxiv.org/abs/1210.2642) [astro-ph.CO]

Detailed record - Cited by 7 records

4. Gravitational collapse of charged dust cloud in the Lovelock gravity
Seiju Ohashi, Tetsuya Shiromizu (Kyoto U.), Sanjay Jhingan (Jamia Millia Islamia). May 2012. 14 pp.
 Published in Phys.Rev. D86 (2012) 044008
 DOI: [10.1103/PhysRevD.86.044008](https://doi.org/10.1103/PhysRevD.86.044008) e-Print: [arXiv:1205.5363](https://arxiv.org/abs/1205.5363) [gr-qc]

Detailed record - Cited by 3 records

5. Generic $f(R)$ theories and classicality of their scalarons

R. Gannouji, M. Sami, I. Thongkool

Journal-ref: PLB 716,255-259(2012)

Subjects: High Energy Physics - Theory (hep-th); General Relativity and Quantum Cosmology (gr-qc); High Energy Physics - Phenomenology (hep-ph)

6. Light mass galileons: Cosmological dynamics, mass screening and observational constraints

Amna Ali, Radouane Gannouji, Md. Wali Hossain, M. Sami

Journal-ref: Phys.Lett. B718 (2012) 5-14

7. Cosmological dynamics of non-minimally coupled scalar field system and its late time cosmic relevance

M. Sami, M. Shahalam, M. Skugoreva, A. Toporensky

Journal-ref: PRD 86,103532(2012)

Subjects: High Energy Physics - Theory (hep-th); Cosmology and Nongalactic Astrophysics (astro-ph.CO); General Relativity and Quantum Cosmology (gr-qc); High Energy Physics - Phenomenology (hep-ph)

Spontaneous symmetry breaking in cosmos: The hybrid symmetron as a dark energy switching device

K. Bamba, R. Gannouji, M. Kamijo, S. Nojiri, M. Sami

Comments: LaTeX 11 pages, first sections shortened, conclusions unchanged, to appear in JCAP

13. Benefit from the project to the society:

This study is related to studies in fundamental aspects of Nature.

14. [Any other information you may think is important in this regard:](#)

At CTP, Jamia Millia Islamia, New Delhi, Prof. M. Sami and Dr. S. Jhingan are analyzing the dark energy universe emerging from various scalar field models within and beyond Einstein gravity. In University of Delhi, Deepak Jain (DDU College) and Abha Dev (Miranda House) have been working consistently for several years on the observational tests of dark energy models.

We have been interacting in the past on several occasions, during seminars and conferences held at Jamia Millia, University of Delhi and other places. We have developed a good understanding and this project seems to be natural outcome of this.

The aim of the proposal is to bring these two research groups with complementary skills together to enhance their research activities in this rapidly evolving field. This may further help to build a hub of scientific activity in the University sector

Centre for Theoretical Physics

1. **Name of the Centre:** Centre for Theoretical Physics
2. **Project Title:** Black Holes, Naked singularities and their formation from gravitational collapse in modified gravity
3. **PI:** Dr. Sushant G. Ghosh



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 13,22,667
7. **Duration of the Project:** 3yr
8. **Starting & Completion date of the Project:** Feb-2011 to Jan-2014
9. **Project objectives:**

We know that (rotating) black holes exist in astrophysics it is important for the self-consistency and the better understanding of these extensions to construct such black hole solutions, to reveal their physical properties and to contrast them with black holes from general relativity. The main objectives of our ongoing project is to address some of the key issues of Black Hole physics in modified theories of gravity, like Lovelock gravity, $f(R)$ gravity, Gauss-Bonnet gravity, Massive gravity. Further, to undertake a detail examination of several gravitational collapse scenario and related cosmic censorship problems in general relativity and modified gravity.

10. A brief overview:

We have addressed some of these unresolved key issues of Black Hole physics, with focus on theoretical aspects, within national and international collaborations, and also built a research group at the CTP, JMI that is strongly interacting with the local community and competitive within the global community. The outcome of research were very well received by international community and they have been appeared in the print in the form highly acclaimed international journal of high impact factor.

11. Infrastructure created from the project:

Desktop Computer 02:- for PI and Project Fellow
Laptop: 02
MF Printer: 01
Softwares: Mathematica, Maple and Atlas

12. Project outcomes:

The following papers are published in International Journals

S. No.	Authors	Title	Journal Details
1.	<u>S. G. Ghosh</u> and L. P. Singh	Gravitating magnetic monopole in Vaidya geometry	Phys. Rev. D 83 , 067501 (2011)
2.	<u>S. G. Ghosh</u>	5D Radiating black holes in Einstein-Yang-Mills-Gauss-Bonnet gravity Grant No. F-39-459/2010(SR)	Phys. Lett. B 704 , 5 (2011)
3.	<u>S. G. Ghosh</u>	Nonstatic charged BTZ-like black holes in N+1 dimensions	Int. J. Mod. Phys. D 21 , 1250022 (2012)
4.	<u>S. G. Ghosh</u> and S. D. Maharaj	Gravitational collapse of null dust in $f(R)$ gravity	Phys. Rev. D 85 , 124064 (2012)
5.	<u>S. G. Ghosh</u> , S. D. Maharaj and <u>U. Papnoi</u> (Project Fellow)	Radiating Kerr-Newman black hole in $f(R)$ gravity	Eur. Phys. J. C 73 , 2473 (2013)
6.	N. Dadhich, <u>S. G. Ghosh</u> and S. Jhingan	Gravitational collapse in pure Lovelock gravity in higher dimensions	Phys. Rev. D 88 , 084024 (2013)
7.	N. Dadhich, <u>S. G. Ghosh</u> and S. Jhingan	Bound orbits and gravitational theory	Phys. Rev. D 88 , 124040 (2013)
8.	A. J. John, <u>S. G. Ghosh</u> and S. D. Maharaj	Accretion onto a higher dimensional black hole	Phys. Rev. D 88 , 104005 (2013)
9.	<u>S. G. Ghosh</u> and P. Sheoran	Higher dimensional Non-Kerr black hole and energy extraction	Phys. Rev. D 89 , 024023 (2014)
10.	<u>S. G. Ghosh</u> , S. Jhingan and D. W. Deshkar	Spherical gravitational collapse in 5D Einstein-Gauss-Bonnet gravity	J. Phys. Conf. Ser. 484 , 012013 (2014)
11.	<u>S. G. Ghosh</u> and S. D. Maharaj	Cloud of strings for radiating black holes in Lovelock gravity	Phys. Rev. D 89 , 084027 (2014)
12.	A. Ganguly, <u>S. G. Ghosh</u> and S. D. Maharaj	Accretion onto a black hole in a string cloud black ground	Phys. Rev. D 90 , 064037 (2014)
13.	<u>Sushant G. Ghosh</u> , Uma Papnoi	Spinning higher dimensional Einstein-Yang-Mills black holes	Eur. Phys. J. C 74 , 3016 (2014)
14.	Uma Papnoi, Megan Govender, <u>Sushant G Ghosh</u>	Thermodynamic structure of field equations near apparent horizon for radiating black holes	Modern Physics Letters A 29 , 34(2014) 1450188
15.	<u>Sushant G. Ghosh</u> , Pankaj Sheoran,	Rotating Ayón-Beato-García black hole as a particle	Phys. Rev. D 90 , 103006

	Muhammed Amir	accelerator	(2014)
16.	Sushant G. Ghosh, Uma Papnoi, Sunil D. Maharaj	Cloud of strings in third order Lovelock gravity	Phys. Rev. D 90 , 044068 (2014)
17.	Uma Papnoi, FarruhAtamurotov, <u>Sushant G. Ghosh</u> , BobomuratAhmedov	Shadow of five-dimensional rotating Myers-Perry black hole	Phys. Rev. D 90 , 024073 (2014)

13. Benefit from the project to the society:

The Project Fellow Ms Uma Papnoi Completed her Ph.D.

Centre for Theoretical Physics

1. **Name of the Centre:** Centre for Theoretical Physics
2. **Project Title:** Towards understanding the origin of dark energy, dark matter and inflation
3. **PI:** Prof. M. Sami



4. **Co-PI:** Prof. Sanjay Jhingan



5. **Funding Agency:** Ministry of Science & Technology
6. **Amount funded:** INR. 3,94,000
7. **Duration of the Project:** 2yr
8. **Starting & completion date of the Project:** 2009-2011

9. **Project objectives:**

- Developing and studying particle physics models of inflation and analyze the constraints from CMB observations.
- Realizing particle physics models of dark energy.
- Study of particle physics models of interacting dark energy and dark matter.
- Using observational data to constrain the dark energy models based upon modified theories of gravity.
- Study the cosmological implications of D-brane dynamics for inflation and dark energy.

10. **A brief overview:**

Modern Cosmology witnessed the first revolution in 1980 with the invention of Inflation. The paradigm has stood the test of theoretical and observational challenges in the last two decades. In spite of its successes, it still remains a paradigm in search of a viable model. Its realization is ad hoc and it lacks strong support from a fundamental theory. Many models can meet the observational constraints. Future precision experiments can help to narrow the class of models. It is therefore not surprising that efforts are being made to derive inflationary models from string theory, a consistent quantum theory around the Planck's scale.

The high redshift supernovae observations in 1998 have thrown yet one more challenge to theoretical and observational cosmology. Universe seems to be in the

phase of accelerated expansion at present. Cosmic speed up is either a result of dark energy [1, 2], an exotic form of matter, which 70% of the total energy content of the universe or the modification of geometry itself. A host of models are under active investigations at present. Again, observations fit many different schemes and it is hoped the future precision experiments in the next decade would pin point a model or a class of models that can account for late time acceleration. In view of the large amount of data related to supernovae, CMB, large scale structure and lensing, it is important to investigate the constraints on the model building. On the theoretical side, it is important to derive models of inflation and dark energy from fundamental theories of particle physics. String inspired models like brane world cosmology has been under active consideration for last five years[3, 5]. String theory has a very research structure of non-probative objects like D-branes. Their dynamics contains crucial information about the early universe and late time physics [6, 7, 8]. In collaboration with Shinji Tsujikawa, we have recently investigated string inspired models and studied D-brane models of inflation and dark energy[9]. The study of dark energy and dark matter interacting with each other in the frame work of supersymmetric models using the chameleon mechanism is important in view of the in coming LHC data. Work in this direction has recently begun. In our joint study in the next two years we propose to focus on the following topics:

11. [Infrastructure created from the project](#): NIL

12. [Project outcomes](#):

1. Constraining $f(R)$ gravity models with disappearing cosmological constant
I. Thongkool, M. Sami (Jamia Millia Islamia), R. Gannouji (IUCAA, Pune), S. Jhingan (Jamia Millia Islamia).
Published in Physical.Review. D80 (2009) 043523
DOI: [10.1103/PhysRevD.80.043523](https://doi.org/10.1103/PhysRevD.80.043523)
e-Print: [arXiv:0906.2460](https://arxiv.org/abs/0906.2460) [hep-th] | [PDF](#)
[Detailed record](#) - [Cited by 42 records](#)

2. Vainshtein mechanism in Gauss-Bonnet gravity and Galileon aether
Radouane Gannouji (Ochanomizu U. & Oslo U.), M. Sami (Jamia Millia Islamia)..
Published in Physical Review D85 (2012) 024019
DOI: [10.1103/PhysRevD.85.024019](https://doi.org/10.1103/PhysRevD.85.024019) e-Print: [arXiv:1107.1892](https://arxiv.org/abs/1107.1892) [gr-qc] | [PDF](#)
[Detailed record](#) - [Cited by 6 records](#)

13. [Benefit from the project to the society](#):

This study is related to studies in fundamental aspects of Nature.

14. [Any other information you may think is important in this regard](#):

At present there are two major challenges in cosmology, the understanding of early universe physics and the puzzle of late time acceleration related to dark energy and the problem of dark matter. The pouring of data and its increasing precision makes cosmology most exiting subject for observers and theoretical physicists. Cosmology has now become an integral part of high energy physics.

The expected results from LHC might yield important information about dark matter particles. Cosmologists are turning to fundamental theories like string theory in search of justification of Inflation and dark energy. The string theorists are interested to find the indirect verification of string theory in cosmology. Early universe provides avenues when energy scales were of the order of Planck needed to see the signature of string theory. The work on the interface of cosmology and high energy physics is most exciting and it is therefore not surprising that experts from all the leading research world organizations are engaged in this field. The recent WMAP5 results have thrown fresh challenges for inflationary models. It would be interesting to investigate the models of inflations based upon D-brane cosmology where the tensor to scalar ratio of density perturbations is generally very small.

The data (supernovae, CMB, LSS, BAO, Lensing) available at present is not in position to distinguish the dark energy models from cosmological constant. The Planck data might unveil the dynamics of dark energy.

Our joint proposal deals with the burning problems of theoretical cosmology which are under active attention of the world community at present.

Faculty of Humanities and Languages

Department of English

1. **Name of the Department:** Department of English
2. **Project Title:** Economic empowerment of home based workers through micro credit and Government scheme.
3. **PI:** Dr. Simi Malhotra



4. **Co-PI:** Nil
5. **Funding Agency:** National Commission for women
6. **Amount funding:** INR. 30,000
7. **Duration of the Project:** 1 Day
8. **Starting date of the Project:** 17-03-2010 to 18-03-2010
9. **Project objectives:**

The Main Objectives of the Programme

Keeping the above in mind, the main objectives of this workshop will be to:

1. To learn about the problems that home-based workers of the area find in doing their work.
2. To provide awareness, literacy and training in schemes and programmes of the government and banks that can help them to address their problems. This will also be the first step to link these women with government schemes and projects in order to facilitate training programmes and augment their financial and technical requirements.
3. To train the key organisers who are working amongst these women in the concepts and working of micro-credit which forms the basis of most of these schemes.
4. To explore the role that the university can play in facilitating the linkup between the government, banks, and other organisations and these home based workers

10. **A brief overview:**

Jamia Millia Islamia, a University founded in the lap of the nationalist movement in the 1930s, was founded on the Gandhian concept of Nai Talim in which education and awareness building was to be linked to societal needs. The outreach programme of the university seeks to fulfil this objective and bridge the gap between its neighbourhood and the university. The proposed workshop is an important step at

achieving this objective. The Jamia neighbourhood consists of Muslim home-based women

Workers who do a variety of tasks like embroidery, Zardosi work, bangle making and pressing of nut bolts etc., for middlemen who get them this work. However their work is neither of a scale or scope that can enhance their livelihood nor does it save them from the exploitation of the middle men. In order to ameliorate this situation, it is necessary that these women are empowered and linked up with government programmes so that they can learn new skills, get better link up and marketing facilities and be in a better bargaining position as far as the value of their labour is concerned.

11. [Infrastructure created from the project](#): Nil

12. [Project outcomes](#):

1. Muslim women workers who do bulk of the home based work in the area of Zakir Nagar, Shaheen Bagh, Joga Bai extension and other neighbourhood areas.
2. Women's groups and their key organizers working in these areas. The aim will be to identify and formulate an action plan with key organisers, who can be the link between the government and these home-based workers,
3. The role of university in helping with this will also be discussed.
4. Sunil Kumar, Supervised by Prof Simi Malhotra, title: "Aesthetics, Technology and the Self: Tracing the Theoretical Shift from Frankfurt School to Postmodernism", 2014

Faculty of Humanities and Languages

Department of Urdu

1. **Name of the Department:** Department of Urdu
2. **Project Title:** Socio Cultural Perspective of Long Poems in Urdu and Hindi: A Comparative Study
3. **PI:** Dr. Nadim Ahmad
4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount Funded:** INR. 8,19,100.
7. **Duration of the Project:** 2yr
8. **Starting & completion date of the Project:** 2011-2013
9. **Project objectives:**

To study the Development of Urdu and Hindi long poems in the Socio-Cultural perspective, and also to know the Rational and demands of Socio-Cultural perspective in Urdu and Hindi long poems. To study the contribution of the writers of Urdu and Hindi long poems with respect to their impact. To examine the contribution of important Movements and Institutions in the development of Socio-cultural perspective of Urdu and Hindi long poems, their effectiveness in the contemporary age, their relevance in our society, their impact on nation building and also to examine the relevance of some selected poets in modern times.

10. **A brief overview:**

In this project some of the selected and important long poems of the major Urdu and Hindi Poets have been analyzed with brief introduction. Various Poems including some of the well known earliest Long Poems, written in Urdu, are Joginama, Khizr-e-Rah, Masjid-e-Qurta, Saqi Nama, Harf-e Akhir, Ek Ladka, Nai dunya Ko Salam and Asia Jag Uthha etc. Similarly, there are many poets in Hindi who opted for this poetic style at the same period. For example parivartan, Parly Ki Chhya, Ram Ki Shakti puja, Saroj Samiriti, Kukurmutta and other poems. The trend of Long Poems is getting common in the modern poetic style of composition. The poems Sargaja, Salsalatuljaras, Sindbad, Sayyara, Khamosh Awaaz, Purchhaian, Iran Mein Ajnabi, Hassan Kozagar, Adhi Sadi ke Bad, Kaya Tum Pura Chand Na Dekhoge in Urdu and Samay Devta, Andheri Mein, Alvida, Atamhattya ke virudh, Asadhya Veena, Upp Nagar Se Vapsi, Natak Jari Hai in Hindi manifest the same.

The Long Poems in Urdu and Hindi activists have depicted tragedies of India's partition at great length, rejecting the two nation's theory and branding the partition as unnatural and against the secular traditions. They have also played a pivotal role to bring forth various social, cultural, economic and political problems faced by the independent India. Thus this project has great significance for a comprehensive and

through history of Urdu and Hindi long poems. In order to give the consequential conclusion we have considered the best books, journals and magazines on Urdu and Hindi Long Poems published and available in different libraries and Universities.

11. **Infrastructure created from the project:**

A laptop, one camera, an all in one printer, one oil filled Radiator (Heater), one ken star cooler has been purchased in this project. Approximately four hundred fifty (450) important Urdu and Hindi books have also been purchased.

12. **Project outcomes:**

In this project many Urdu and Hindi Long Poems have been selected and critically analyzed and also the information related to the writers of Long Poems has been made available. The attempt has been made to make a comprehensive and through history of Urdu and Hindi long poems for the students, researchers who are willing to go through this topic or any other kind of educational and research work.

13. **Benefit from the project to the society:**

This study of Urdu and Hindi long poems in the Socio-Cultural perspective, and the contribution of the writers of Urdu and Hindi long poems with respect to their impact are very effective and relevant at present times. Their impact on our society and nation building is remarkable. Urdu and Hindi revolutionary poems are very much popular among today's generation. The importance of Allama Iqbal's poetry for the youth of 20th and 21st century is remaining vital. The present scenarios of changed Urdu and Hindi long poems are socially and culturally much benefitted.

Faculty of Humanities and Languages

Department of Urdu

1. **Name of the Department:** Department of Urdu
2. **Project Title:** Tagore research and translation scheme
3. **PI:** Scheme was assigned to the Department of Urdu JMI and Prof. Shahzad Anjum has been nominated as a Coordinator of the Scheme
4. **Co-PI:** Nil
5. **Funding Agency:** Ministry of Culture, Govt of India
6. **Amount funded:** INR. 96,00,000.
7. **Duration of the Project:** 2yr
8. **Starting & Completion date of the Project:** October 2012
9. **Project objective:**

The main objective of the project was to introduce Rabindranath Tagore and his writings to the Urdu world by translating his selected writings. Moreover national seminars, workshops, lectures and staging his drama and promoting Tagore through different cultural programs and activities were the major areas of work of the scheme. Compiling the writings of Urdu writers in the form of Book and calling visiting fellows to work on Tagore's writing and doing research in order to find the old writings related to him. One of the objectives was revamping Tagore's views in Urdu literary circle as well.

10. **A brief overview:**

In order to prop up the creative mechanism and perceptions and ideology of the universal literary figure, poet and scholar Rabindranath Tagore, the Government of India's Ministry of Culture granted the venture Tagore Research and Translation Scheme. Within the short period of two years, from October 2012 to September 2014, this project has won reputation, fame and popularity among Urdu scholars. It is an achievement that ten books have been published under this scheme besides organizing two three-day national seminars, four five-day workshops, several extension lectures, verities of cultural programs and two Inter-University Competitions.

Under the scheme, publishing the books titled Tagore Shanasi, Gitanjali, Rabindranath Tagore: Shair aur Danishwar, Rabindranath Tagore: Fikr-o-Fun ke Hazaar Rang, Tagore ki Bazyaf, Tagore ke Mazameen, Meri Yadein, Tagore ke Afsane, Tagore ke Dramey, Tagore aur Iqbal, Baghbaan etc, in thousands of copies is undoubtedly a great venture in research and translation.

11. **Infrastructure created from the project:**

Air conditioner, Computer with accessories, Laptop, Printers, Photo Copier Machine, Furniture for office, Water Cooler, Published Books on Tagore

12. Project outcomes:

Books Published - 09

<i>Book</i>	<i>Author/Editor/Translator</i>
1. Tagore Shanasi	Shamim Tarique
2. Gitanjali	Suhail A. Farooqi
3. Rabindranath Tagore: Fikr-o-Fun ke Hazar Rang	Wahajuddin Alvi/ Shahzad Anjum
4. Rabindranath Tagore: Shair Aur Danishwar	Wahajuddin Alvi/ Shahzad Anjum
5. Meri Yadein	Fahim Anwar
6. Tagore Aur Iqbal	Nadim Ahmad
7. Tagore Ke Mazameen	Tagore Committee
8. Baghbaan	Hamid H. Qadri
9. Tagore ke Dramey	Tagore Committee

Books under publication - 04

1. Tagore ki Bazyaft	Wahajuddin Alvi/ Shahzad Anjum
2. Gora	M. Ali
3. Kalam-e-Tagore	Zia Amritsari
4. Tagore ki Kahaniyan	Tagore Committee

Seminars Organized - 04

Title of the Seminar	Type	Organized on
1. Rabindranath Tagore in the Twenty First Century	Three Day National Seminar	March 1-3, 2013
2. Rabindranath Tagore in The Indian Literary Perspective	Three Day National Seminar Research Scholar's	October 4-6, 2013
3. Tagore Aur Iqbal	Seminar	12-Mar-14
4. Tagore and his Distinguished Contemporaries	One Day National Seminar	17-Sep-14

Workshops Organized – 04

1. A Five- Day National Workshop	JMI, New Delhi	December 17-21, 2012
2. A Five- Day National Workshop	Muslim Institute, Kolkata	March 12-16, 2013
3. A Five- Day National Workshop	JMI, New Delhi	August 21-25, 2013
4. A Five- Day National Workshop	JMI, New Delhi	December 16-20, 2013

Extension Lectures – 09

Delivered by	Delivered on
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1. Prof. Mujeeb Rizvi, New Delhi	August 1, 2013
2. Mr. M. Ali, Kolkata	August 20, 2013
3. Mr. Suleman Khursheed, Kolkata	August 20, 2013
4. Mr. Pawan K. Verma, Patna	December 16, 2013
5. Prof. Francis W. Prichit, USA	February 7, 2013
6. Prof. C.M. Naim, USA	March 10, 2013
7. Prof. Atiqullah, New Delhi	August 7, 2014
8. Prof. Ehtesham Hasnain	September 3, 2014
9. Prof. Mushirul Hasan	September 11, 2014
<u>Mushaira – 04</u>	Held on
1. All India Mushaira	February 9 th , 2013
2. All India Mushaira	October 29, 2013
3. Poetry Meet	August 23, 2013
4. Mushaira	August 14, 2014
<u>Competition – 02</u>	
1. Inter University Essay and Debate Competition	March 20-21, 2013
2. All India Inter University Essay Writing Competition	January 31, 2014
<u>Cultural Activity – 3</u>	
1. Chahar Bait	February 08, 2013
2. Qawwali	December 17, 2013
3. Drama	December 19, 2013
<u>Meetings- 03</u>	
1. First National Advisory Committee, TRTS	December 19, 2012
2. Second National Advisory Committee, TRTS	December 18, 2013
3. Third National Advisory Committee, TRTS	September 16, 2014
13. Benefit from the project to the society:	

Familiarizing the Urdu world with Rabindranath Tagore and his literary perceptions and bringing Tagore's writing into the core academic stream through translation of his writings into Urdu and compiling & editing books based on Urdu scholars views related to Rabindranath Tagore. Moreover, organizing cultural programs like Chahar Bait, Qawwali, Drama, All India Mushaira and Inter University writing and debate competitions made Tagore familiar to the common people even those who do not have interest in literature in general.

Faculty of Humanities & Languages

Department of Urdu

1. **Name of the department:** Department of Urdu
2. **Project Title:** An Analytical Study of the Writing to fifty Major Urdu Short Story Writers
3. **PI:** Dr. Shahzad Anjum



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 8,64,600
7. **Duration of the Project:** 2yr
8. **Starting & completion date of project:** 2012-14
9. **Project objectives:**

The main objective of the project was making selection of the fifty major short story writers and their literary contribution. The selection of more than fifty short stories needed to be considered for critical evaluation and analysis. More than one short story of veteran short story writers like Bedi and Premchand had been considered. In order to analyze the short stories, overall journey of Urdu short story writing portrayed besides focusing the eminent writers' life and their knowledge impact on Urdu short stories. The best methodologies had been taken into account to study and analyze the said selected short stories.

10. **A brief overview:**

In this project the selected and important short stories of the fifty major and trend setter short story writers have been analyzed with the short and crisp biog. Many short stories of the fifty short story writers including Prem chand, Bedi, Krishn Chander, Manto, Hayatullah Ansari, Ali Abbas Husaini, Ahmad Ali, Khwaja Ahmad Abbas, Kalam Haideri, Qazi Abdus Sattar, S.M. Ashraf, Ghayas Ahmad Gaddi, Balraj Meenra, and many more have been analyzed in this project. We have also considered the short stories of contemporary and budding writers to portray the trend of short story writing in the Urdu literature.

The above mentioned short stories have been analyzed with periodic, social, political and cultural perspective. In order to do give the meaningful and important conclusion we have considered the best books journals and magazines on Urdu short stories and short story writers published and available in the different Universities of India and the noted libraries

11. **Infrastructure created from the project:**

A laptop and books

12. **Project outcomes:**

In this project out of total Urdu Short stories the fifty of them have been selected and critically analyzed and also the information related to the story writers has been made available. The ample effort has been made to provide ease to those research scholars who are willing to work on Urdu short stories and short story writers or any other kind of educational and research work. After going through this project the specific Urdu sect and even common reader will be introduced with the short stories and their writers.

13. [Benefit from the project to the society:](#)

Collecting all the important and trend setter selected short stories at one place with the writers' biog so the researchers, readers, and common people will be able to be introduced with the selected important short stories and their writers.

Faculty of Education
Department of Teacher Training & NFE

1. **Name of the Department:** Teacher Training and NFE
2. **Project Title:** “A Study of In-service Programmes in ICT for Teachers at Different Levels in India.”
3. **PI:** Prof. Jessy Abraham
4. **Co-PI:** Prof. Ahrar Husain, Dean, Faculty of Education, JMI
5. **Funding Agency:** UGC
6. **Amount funded:** Rs. 8, 14, 823 only
7. **Duration of the project:** 3 years and six months
8. **Starting date of the Project:** April 1st 2008 to September 2011
- 9 **Project objectives:**
 - (1)To study the availability of In-service programmes in ICT for teachers at different levels in different states.
 - (2)To study the content of the different In-service programmes in ICT for teachers at different levels in different states.
 - (3)To assess the perception of teachers regarding the need for training in ICT through In-service programmes in ICT for teachers at different levels in different states.
 - (4)To suggest measures to improve the training in ICT given through In-service programmes in ICT for teachers at different levels in different states, if any
 - (5)To show case best practices in the In-service programmes in ICT for teachers at different levels in different states.
10. **A brief overview:**

It was an exploratory study using survey method which was conducted in two phases covering 22 agencies and 1833 teachers from six states such as Delhi, Uttar Pradesh, Rajasthan, Kerala, Mizoram and Haryana. The study covered Agencies such as EduComp, Microsoft, IT@ school, SCERTS, DIETS and Science centres were approached for getting information. The data was collected using two questionnaires from the agencies and participating Teachers during phase-I and during second phase two tools such as Interview Schedule and Questions for focus group discussions were used. The content validity of the tools were established through expert consensus. Major findings are: In Delhi In service Programmes are organized through the SCERT, 9 DIETS and Science Centres for different levels of schooling. Intel and Microsoft were the key service providers involved in INSET programmes in ICT. The Private schools are training their

teachers through Intel and also EduComp computer services .HCL also was involved in setting up and maintaining SMART Classrooms of the Public schools and they provide training to teachers in their respective schools.In Uttar Pradesh (UP) Microsoft was the key player to conduct INSET programmes for in-service teachers in ICT/ General with the collaboration of State government. Government has distributed all UP in six mandals for INSET training programmes and established computer lab in DIETs and all six mandals. In Mizoram, SCERT conducted INSET programmes for in-service teachers in ICT/ General for the State government.Haryana State's SCERT conducted INSET programmes for the Haryana State teachers during' 2006, but later from 2007 to March 2011' Director's office reported that they had prepared a proposal for in-service programmes and send it to the government. After the permission they will be start INSET programmes for the teachers in ICT or general programmes. In Kerala IT@schools has been providing full facility to the teachers for ICT training or ICT training programmes for the teachers enabled education from the grass root level. The ICT Curricula and its training use both Microsoft Windows and free software GNU/Linux OS and the teachers are trained to use both in the in-service programmes.The backbone of the project is its strong network of 200 Master Trainers and 5,600 School IT Co-coordinators (SITCs) in the state, who are handpicked school teachers who are selected, based on their interest in learning and teaching ICT enabled education. Other agencies who are conducting INSET programme for the teachers or train teachers in new technologies working with the IT@SchoolSPACE(Society for Promotion of Alternative Computing and Employment) support IT@school's migration to Free Software through a project covering 2800 schools of Kerala SPACE has trained 500 teachers and distribute GNU/Linux software.In Rajasthan the data was collected from Intel the State Govt.School teachers at all levels are trained through Intel.To facilitate KVS teachers in implementing innovative learning methodologies and making use of new technologies, Intel had also set up labs at KendriyaVidyalaya - JNU and KendriyaVidyalaya - Malleshwaram and KendriyaVidyalaya - Fort William in the year 2000. In 2009 an ICT Resource Centre at the Zonal Institute of Education & Training Centre, KendriyaVidyalayaSangathan, and Gwalior was also set up. The Resource Centre is now open for KV teachers for their Professional Development activities. It was

inaugurated in March 2009. Intel has its association with NVS since 1999 and has trained more than 3000 teachers till date under the Intel® Teach Program.

11. [Infrastructure created from the project:](#)

Obtained Rs. One Lakhs for purchasing Books and it was purchased and later handed over to Zakir Husain Library of Jamia Millia Islamia.

12. [Project outcomes:](#) A paper entitled 'Study of the availability of In-service programmes in ICT for teachers at different levels in different states' Co authored with Ahrar Husain in the forthcoming International Conference IEC-2015, in February 2015

13. [Benefit from the project to the society:](#)

As the ICT policy for school education is being implemented, the findings of project are useful for those in the process of implementing it.

14. [Any other information you may think is important in this regard:](#) Nil

Faculty of Education
Department of Teacher Training & NFE

1. **Name of the Department:** Teacher Training and NFE
2. **Project Title:** “A study of Integration of ICT in Pre- service teacher education curricula and its impact on Achievement, Attitude, and Motivation”
3. **PI:** Prof. Jessy Abraham
4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR
6. **Amount funded:** Rs.2 Lakhs 83 thousand
7. **Duration of the project:** 2 years
8. **Starting date of the Project:** April 1st 2009 to 31-3-2011
9. **Project objectives:**

1. To study the extent of integration of ICT in the teaching learning situation of Pre-service Teacher Education Curriculum.
2. To study the extent of integration of ICT in the teaching learning situation by teachers by pre-service teachers.
3. To study the achievement of student teachers in terms of students’ performance, students’ satisfaction, peer review and self assessments of student teachers.
4. To study the attitude of student teachers.
5. To study the motivation of student teachers.

10. **A brief overview:**

It was an exploratory study on a random student teachers from 12 different teacher education institutions in and around Delhi. These pre service teachers belonged to BEd and Diploma ETE second year courses only .A total of 381 BEd students and 222 Diploma ETE students. 49% percent of the student teachers were males whereas 51% were female. A random sample of 18 teacher educators with 22% male and 88% female teacher educators also constituted the sample.

Tools such as Comprehensive Questionnaires for student teachers and teacher educators, ICT Competency test for B.Ed, or ETE Student Teachers and Motivation Analysis Test (Cattell, Horn,Sweney and Redcliffe(1964) was adapted for this study..All the teacher education institutions covered in this study were having curricula in which ICT was integrated. According to Pre-service teachers they had access to Desktops, laptops Scanners, computer labs, Multimedia. Printers, Projectors.Internet connections, Educational CDs and in some cases even visualize, Interactive smart board and resource centre for computers and a few had Internet Connection (personal), though majority of the pre-service teachers did not possess any computer at their home. Though 51.2% of pre-service teachers had any training and felt that the training they undertook was sufficient, there was need for providing them more training.

Most predominant use was of ICT for studying.. Most of the ICT skills possessed by the pre-service teachers were limited to computer literacy such as start and shutdown computer, use of MS Word, MS Excel/spread sheet, and use power point. Though they knew how to chat and also print, most of them did not know about MS Access or Use of MS Publisher/Publication software application or any educational software or even use LCD Projector. 50.7% of total pre-service teachers reported that they integrate technology into their teaching and it was limited to use of PowerPoint and excel in their teaching. Most of the student teachers's Self Rating of the efforts to integrate technology in teaching average and above. Teacher educators reported that they had different ICT resources like Networked scanner computer, Networked Laptop computer ,Display Technologies, Handheld computer , Digital video and camera equipment and Specialist subject equipment. Though there were 100% connectivity to internet, Only 14 teacher educators (77.7%) reported that the hardware and software were in good condition. Only one third of the teacher educators got any training.

Mostly used their computers for academic purposes; studying or research and Lesson planning, Lesson Delivery, Assessment, Record Keeping and saved time .

Attitude of Pre-service teachers and teacher educators regarding integration of technology in teaching was favourable and likely to use technology in future also. When the comparison of the mean score obtained in each of the variables studied such as ICT, Achievement, Attitude and motivation of male and female pre-service BEd and ETE students, significant differences were observed in Achievement in the case of both BEd and ETE students(.001 level). Female pre-service teachers' performance was better. ETE male and female student teachers differed significantly in the case of motivation. Male ETE pre-service teachers were more motivated than girls.

9. The difference between the means of achievement, motivation and attitude were significant (.05) .between the low ICT versus High ICT

11. [Infrastructure created from the project:](#)

Obtained seven Books from the grant and later handed over to Zakir Husain Library of Jamia Millia Islamia.

12. [Project outcomes Article:](#)

1	A study of Integration in Pre-service Teacher Education	Jessy Abraham	Advanced International Research Journal of Teacher Education	Vol. 1No.2 23-34 Sept2013	ISSN2320-4559 E- ISSN:2321-7995
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Book

1	Integration of ICT in Pre service Teacher Education	Jessy Abraham	Global Books OrganizationDelhi	978-93-80570-25-9	20 12
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13. [Benefit from the project to the society:](#)

As the ICT policy for school education is being implemented, the findings of project are useful for those in the process of implementing it.

Faculty of Education
Department of Teacher Training & NFE

1. **Name of the Department:** Teacher Training and NFE
2. **Project Title:** Availability and Use of ICT in schools in Delhi
3. **PI:** Prof. M.A Siddiqui
4. **Co-PI:** Prof. Jessy Abraham.
5. **Funding Agency:** NCERT
6. **Amount funded:** Rs.2.5 Lakhs
7. **Duration of the project:** 2 years
8. **Starting date of the Project:** Feb 2006 to Feb 2008
9. **Project objectives:**
 - (1) To study the extent of availability of hardware and software facilities in Schools in Delhi
 - (2) To study the extent of use of technologies in different types of schools as evident from competencies in students
 - (3) To study the impact of ICT on students
 - (4) To study the extent of training in computers received by the teachers of Delhi.

10. **A brief overview:**

In this study a sample of 309 schools consisting of 157 Govt . Schools, 52 Govt. Aided, 93 Public Schools, 5 Kendriya Vidyalayas and 2 Jamia schools were selected and from these schools random sample of total of 822 primary school students made of 242 govt . school students , 115 Govt. Aided school students , 260 Public School students , 120 Kendriya Vidyalaya students and 85 Jamia school students of primary level and total sample of 970 secondary school students 438 govt . school students , 162 Govt. Aided school students , 206 Public School students , 70 Kendriya Vidyalaya students and 94 Jamia school students of secondary level and also a total sample of 196 teachers made of 108 govt . school teachers , 15 Govt. Aided school teachers , 47 Public School teachers , 10 Kendriya Vidyalaya teachers and 28 Jamia school teachers were selected and four questionnaires were administered to collect information from school heads, students of primary and secondary levels and teachers.

The findings were discussed under the following headings: Availability of ICT in Delhi Schools, Uses of ICT/ Computer in schools in Delhi, Impact of ICT on Students, Training of Teachers in Delhi to use computers, Availability or Access to computers for Teachers.

A. **Availability of ICT in Delhi Schools**

1. *School having e-mail ID:* 9.5% of government schools, 11.5% of govt. aided, 13.9% of public and 20% KVS schools reported that they have an e mail ID.
2. *Computers availability in schools in Delhi:* 94% of the total schools in Delhi have computers.
3. *The percentage of Computers in Good Conditions* was 92.41% of the total
4. There were *computer labs* in 84% of the schools studied.
5. There was the facility of *Printer* available in 79.62%
6. *Scanner* was present in 29% of the schools: 12% of the total

schools studied. **8.** The *availability of data lodger* was poor as only 1.94% of total schools studied and 13% of total school studied had an LCD projector. **9.** The *availability of internet facility* in the school is excellent, 74.52% **10.** *Availability of educational Software* 20.38 % **11.** *General Knowledge CDs* are available only in 10.68% total schools covered in these study. **12.** Online libraries: This facility is available only 5.5% total schools covered in this study.

No of Periods Available for Computers: i) At the nursery level only public schools separate periods for using computers but no govt. schools have any such arrangement. ii) At the Primary Level only 22% schools had separate periods for computers. iii) At Upper Primary School Level only 68.93% schools had separate periods for computers. iv) At Secondary Level only 61.48% schools had separate periods for computers) at higher secondary level, only 43.68% schools had separate periods for computers.

B. Uses of ICT/ Computer in Schools in Delhi In admission process and for maintaining records it is used but not in Library or in Examination and Computer as teaching subject: 81% of the schools covered under this study had computer as a teaching subject.

C. Impact of ICT on Students :Category wise, Students with different levels of ICT Competency was compared with their achievement and it was found that those who scored low in ICT competency had low achievement also, with a few exceptions. Time spent on studies by students The time spent on studies is higher in the case of students who were having average and high ICT scores when compared with those who had low scores in ICT competency. On an average majority of students belonging to all groups spent only 2-3 hours per day for studying. The three groups low, average and high ICT groups did not differ in the interests in the case of computer, but the low ICT competency group was interested in studying/ reading whereas average competency group was interested in games.

D. Teachers Trained to use Computers in classroom teaching: It was found that 35.2% of teachers have had no training in computers. 64.8 % of the teachers who took part in the study reported they were trained in computers. 32% of the teachers had received Departmental training Computer Education. 12% of the total sample had Intel training. Rest of the teachers 21% had some technical qualification

E. Availability or Access to computers for Teachers.: 53% teachers had no computers at home. Time spent by teachers using computers is very less. iv) *Preparedness for ICT:* In the sample of teachers who took part in the study except for 3.57% teachers others were not computer teachers, they were willing to undergo further training and use computers in classroom teaching .Other Conditions Favourable for Integration of ICT in schools in Delhi: schools having their websites, belief that ICT could improve quality, managements favour technology, evidence of integration of technology in their curriculum, parental support, learning culture and welcome innovative ideas.

11. *Infrastructure created from the project:* Nil

12. *Project outcomes:* 1. Paper presented in conferences:

Presented a paper on “Promoting ICT Based Learning for Preparing Teachers” in the International seminar on ‘ICT in Education on 12th September in 2009 at Jammu University

2. Paper Accepted for Presentation in IEC 2015 entitled ‘Availability of ICT in Schools in Delhi’

3. A book is being prepared for publication shortly

13. [Benefit from the project to the society](#): It gives information about the ICT facilities and its uses in Delhi and also what need to be done for facilitating its effective use

Faculty of Engineering & Technology Department of Mechanical Engineering

1. **Name of the Department:** Mechanical Engineering
2. **Project Title:** MODROBS (Fluids Mechanic Lab)
3. **Project Investigator:** Prof Abid Haleem.



4. **Co-Investigator:** Prof Abdur Rahim.
5. **Funding Agency:** AICTE
6. **Amount funded:** INR 15,00,000
7. **Duration of the project:** One Year
8. **Starting and completion date of the Project:** 2013-14
9. **Project objectives:**
To create good experiment facility for in fluid mechanics for undergraduate students.
10. **A brief overview/write up of the project:**
The existing lab facility is becoming outdated and we needed state of the art experimentation to cope up the new development in the industry and Academia.
11. **Infrastructure created from the project:**
Air flow bench has been imported from TQ and is being used for experimentation at undergraduate level.
12. **Project outcomes:**
Development and modernisation of fluid mechanics laboratory.
13. **Benefit from the project to the society:**
A good learning for Bachelor of Technology in Mechanical Engineering students. This asset is helping in flow visualisation.
14. **Any other information you may think is important in this regard:** --

Faculty of Engineering & Technology

Department of Mechanical Engineering

1. **Name of the Department:** Mechanical Engineering
2. **Project Title:** Technology Forecasting & Technology Assessment for use of fly Ash.
3. **Project Investigator:** Prof Abid Haleem.



4. **Co-Investigator:** Prof Sirajuddin
5. **Funding Agency:** DST
6. **Amount funded:** INR 16 Lakh
7. **Duration of the project:** 2years
8. **Starting date of the Project:** 2011-13
9. **Project objectives:**

Technology forecasting and technology assessment of fly ash in roads bridges and embankment and allied areas.
10. **A brief overview of the project:**

This study is about the technology forecasting and assessment of fly ash and the need of the technology forecasting and technology assessment of fly ash is also discussed that the ash generation has increased to about 131 million tonne and continue to grow how fly ash can be utilized in the construction of roads and bridges is the main objective of this study.

Various critical success factors for the fly ash utilization are identified through the questionnaire and Structural Model is prepared using the ISM (Interpretive structural modelling).

Fly ash properties & characteristics and how it can be beneficial when used in construction, what are the technologies developed in this area and what are the social, legal, environment and technical issues related to fly ash are also discuss with the help of Delphi approach. These technical, social, legal and environmental issues related to fly ash utilization in roads and bridges are then analysed by the respondent graph using Likert scale questions and guideline standards are developed i.e. how we can use fly ash in roads and bridges.
11. **Infrastructure created from the project:** N/A
12. **Project outcomes:**

Based on ISM, valuable insights can also be drawn as below:

It is revealed that for roads and bridges material availability, material properties and training, education and promotion are the main enabler having high driving power which leads to socio-economic wealth and for embankments material availability and government support is main enabler which reduces soil liability and helps in soil conservation.

With the help of Delphi approach different technologies of fly ash according to their value are compiled, past initiative of fly ash utilization in India and past and future generation and demand of fly ash is discussed and different issues related to social, legal, environmental and technical are also discussed and lastly it conclude that there is huge potential for the utilization of fly ash in the construction of roads, bridges and embankments.

13. **Benefit from the project to the society:**

Understanding used Fly ash an environment support activity.

14. **Any other information you may think is important in this regard:**

Recommendations For 100% Fly Ash Utilization:

- a) Technologies are to be developed for demonstration of bulk utilization options of fly ash in roads, bridges and embankments.
- b) Guideline standards to be developed to ensure quality assurance in value added products from fly ash.
- c) Development and application of high value added utilization of fly ash such as:
 - i. Extraction of titanium oxide, Alumina
 - ii. Development of composite materials, acid/fire resistant bricks /tiles
 - iii. Development of abrasion resistant materials
 - iv. Value added building materials
 - v. Agriculture amendments, etc.
- d) Incubation centres should be set up for technology validation.
- e) "Self-sustaining technology demonstration centres" to be established for technology propagation schemes.
- f) Encourage "Industry-Institute interactions" for entrepreneur development, awareness, training programmes and workshops.
- g) Induction of "fly ash subject in academic curriculum" of Engineering, Architecture, and Post Graduate Science Courses is needed now.

Fly ash has acquired the status of a "useful commodity" which opens up plenty of opportunities in terms of laying & fine tuning policies, conducting gainful businesses and R& D efforts, and addressing the concerns of environment.

Faculty of Engineering & Technology Department of Mechanical Engineering

1. **Name of the Department:** Mechanical Engineering
2. **Project Title:** Strengthening of Research Facilities
3. **Project Coordinator:** Prof Abid Haleem.



4. **Co-Investigator:** None
5. **Funding Agency:** UGC
6. **Amount funded:** INR 20 Lakh
7. **Duration of the project:** One Year
8. **Starting date of the Project:** 2013-14
9. **Project objectives:** Strengthening of the research facility of the department.
10. **A brief overview of the project:**
The department needs some good quality modern equipment for Graduate, Post Graduate and Research students.
11. **Infrastructure created from the project:** Six axes CNC Milling Machine
12. **Project outcomes:**
A good experimental setup for undergraduate and post graduate students. Research students can also use this for undertaking research experimentation.
13. **Benefit from the project to the society:**
Creation of lab facility and to impart latest technological aspects.

Faculty of Engineering & Technology Department of Mechanical Engineering

1. **Name of the Department:** Department of Mechanical Engineering
2. **Project Title:** MODROB Modernization of Automation & Computer Integrated Manufacturing lab
3. **PI:** Dr. Mohd Suhaib



4. **Co-PI:** Nil
5. **Funding Agency:** AICTE
6. **Amount funded:** INR. 19,75,000
7. **Duration of the project:** One Year 2013-2014
8. **Starting & completion date of the Project:** 3/9/2013 to 2/9/2014
9. **Project Objectives:**

The main objective is to modernize the Automation & Computer Integrated Manufacturing laboratory with advanced/upgraded equipments, hardware and computing facilities to enhance the functional efficiency of laboratory for better Teaching, Training and experimenting purposes. In addition, state of art facilities would be provided to carry out the practical work and projects by the students as per the industry needs.

Further, this would provide the good research facilities to students and faculty as well. Through the proposed MODROB scheme students and faculty can train the local industry and some consultancy work as well.

10. **A brief overview:**



Automation & Computer integrated manufacturing Laboratory of Department of Mechanical Engineering, Faculty of Engineering & Technology, Jamia Millia Islamia, New Delhi was established in the year 1998. The equipments (hardware & software) procured at that time were being operated by DOS/early versions of Windows, which are obsolete today. So department is in the process of upgrading the laboratory. This project “Modernization of Automation & Computer Integrated Manufacturing Laboratory” was granted by All India Council for Technical education under Modernisation and removal of obsolescence scheme. The equipments procured under this project are accordingly. Now the results/outputs of the newly procured machines will be compatible with present hardware/software.

11. [Infrastructure created from the project:](#)

Following equipments were purchased in this project:

- i) Actuator Training Panel
- ii) Formula flowcode Robot
- iii) Robot Upgraded ER5Plus to ER4u
- iv) CNC Mill 6000 for integration to CIM

12. **Project outcomes:**

S.NO	Project outcomes	Remark
1	Faculty Development Programme on “Mechatronics and Robotics for Manufacturing Industries”	(27 th Feb to 12 th March, 2015)
2	Training to B.Tech / M.Tech Students	During the semester
3	A Patent “Jamia Hand”	In progress

13. **Benefit from the project to the society:**

- In addition to UG/PG Teaching & Research the Infra structure developed can be used for:
- To conduct the special training Programme for 10th Passed students/ ITI holder. Such training will be help for them to get the job of CNC Machine operators in the different industries of NCR.
- To provide the Robotics laboratory exposure/visit for students of different schools of nearby areas. Mostly schools have robotics club but don't have the Robotics laboratory.

Faculty of Engineering & Technology

Department of Mechanical Engineering

1. **Name of the Department:** Department of Mechanical Engineering
2. **Project Title:** Pilot demonstration of Clean Technology for Landfill gas recovery at Okhla site, Delhi for the year 2009-10
3. **PI:** Dr. Suneel Pandey (The Energy and Resources Institute (TERI), New Delhi)
4. **Co-PI:** Prof M. Imran Khan (Mechanical Engg dept. Jamia Millia Islamia)
5. **Funding Agency:** Ministry of Environment & forest
6. **Amount funded:** INR. 65,71,100
7. **Duration of the Project:** 18 months
8. **Starting Date of Project:** 22, March 2010
9. **Project objectives:** Objective of this study is to demonstrate capture and purification of LFG from Okhla waste disposal site by water scrubbing thereby reducing risk of uncontrolled methane emission.
10. **A brief overview of the project:**

Uncontrolled methane emission from MSW disposal sites are potential source of GHG emission. There are close to 5100 cities and towns in the country each having at least one (mostly two) such sites which are such source of such emissions. Such landfill once they reach their capacities will have to be closed and redeveloped into alternative post closure land use. Efforts worldwide to tackle the problem have focused on gainful recovery of methane as potential energy source. In India, no pilot has been demonstrated in field conditions based on actual site data.
11. **Infrastructure created from the project:**

LFG treatment and flaring system, with support facilities
12. **Project outcomes:**
 - Uncontrolled LFG emission from disposal sites is a national problem which needs to be addressed.
 - LFG harvesting during closure of disposal sites not only stabilizes it but also provides energy for neighbourhood usage.
 - Proper closure with provision of impermeable cover is desirable before LFG harvesting
 - Prepare a master plan for harvesting LFG from such uncontrolled dumps
13. **Benefit from the project to the society:**

Environmental benefits

 - Prevents uncontrolled emission of GHG
 - No adverse health impacts on sanitary workers and waste pickers working at disposal sites and nearby residential population
 - Reduces fire and explosion hazards at landfills

Economic benefits

 - Thermal
 - For drying landfill leachate
 - As cooking fuel or fuel for boiler, furnace or kilns in the neighbourhood
 - Space heating

- Power generation or further purification and use as transportation fuel if methane concentration and flow is high.

14. [Any other information you may think is important in this regard:](#)

Some of the activities that can be carried out for improvements in solid waste sector include:

- Development of commercially viable LFG to Energy utilization technology package;
- Measuring methane emission factors from MSW in metro cities in India;
- Authentication of activity data from municipal sources and its check for consistency in terms of correctness and completeness;
- Adoption of appropriate sampling protocol to capture variability and generation of CH₄ emission; Estimation of methane emissions from municipal waste disposal sites using country specific emission factors.

Faculty of Engineering & Technology

Department of Electrical Engineering

1. **Name of the Department:** Electrical Engineering department, Jamia Millia Islamia.
2. **Project Title:** Modeling and Simulation of solar power system.
3. **Project Investigator:** Prof Majid Jamil.



4. **Co- Investigator:** None.
5. **Funding Agency:** All India Council of Technical Education (AICTE)
6. **Amount Funded:** INR 18.3 Lakh
7. **Duration of the Project:** 2 years
8. **Starting Date of Project:** May, 2012-May, 2014.
9. **Project Objectives:**

The project is intended to develop computer modeling and simulation for various solar energy applications. To improve the accuracy in the estimation of solar irradiance and other solar energy applications, a software tool, based on intelligent techniques is proposed to develop. The other objective of the proposed project is to develop modeling and simulation lab for already running M. Tech. program in Energy Studies

10. **Brief overview of the Project:**

Solar radiation data are the basic requirement in the modelling and simulation of various energy and environmental studies. For example, in a building system a large number of factors related to climate and structural configurations control the indoor temperature. The effectiveness of these factors is highly intricate to be assessed independently in a physical model. Therefore, it is essential to have a mathematical model which would enable engineering analysis and design as well as the system performance prediction on a long-term and short-term basis. The basic input in such a model is the solar radiation data, which is generally variable and enormously inconsistent. These data are often not available for the desired locations and are not of the required accuracy.

The project is intended to develop computer modelling and simulation for various solar energy applications. To improve the accuracy in the estimation of solar irradiance and other solar energy applications, a software tool, based on intelligent techniques is proposed to develop. The other objective of the proposed project is to develop modelling and simulation lab for already running M. Tech. program in Energy Studies.

11. **Infrastructure created from the project:**

S. No.	Item
1.	Pyranometers with Platform
2.	Data Logger

3.	PV systems with storage (Li ion Battery, Nickel Cadmium Battery, lead-acid battery)
4.	PV SYST Software
5.	Computer

12. **Project outcomes:**

Solar radiation data are the basic requirement in the modelling and simulation of various energy and environmental studies. For example, in a building system a large number of factors related to climate and structural configurations control the indoor temperature. The effectiveness of these factors is highly intricate to be assessed independently in a physical model. Therefore, it is essential to have a mathematical model which would enable engineering analysis and design as well as the system performance prediction on a long-term and short-term basis. The basic input in such a model is the solar radiation data, which is generally variable and enormously inconsistent. These data are often not available for the desired locations and are not of the required accuracy. In this project mathematical and intelligent modelling of solar radiation data is done and based upon this data estimation and prediction of solar photovoltaic energy is done.

13. **Benefit from the project to the society:**

Solar radiation data are the Computer modeling & Simulation is becoming important to the power industry today. The measurement of solar irradiance is usually done manually. The network of solar irradiance measuring stations is relatively rare throughout the world. In India only IMD (India Meteorological Department) Pune provides data for quite few stations which is considered as the base data for research purposes. But hourly data of measured irradiance is not available, even for those stations where measurement has already been done. Due to lack of hourly measured data, the estimation of solar irradiance at the earth's surface is required. A tool is needed to simulate the all solar energy applications properly. For research activities, development of intelligent techniques in solar power system is grey areas in which enormous work can be done. Intelligent models of solar irradiance will be developed for large scale sustainable solar power generation.

Faculty of Engineering & Technology Department of Electrical Engineering

1. **Name of the Department:** Department of Electrical Engineering
2. **Project Title:** Development of intelligent protection scheme for transmission system.
3. **PI:** Prof Majid Jamil



4. **Co-PI:** NA
5. **Funding Agency:** AICTE
6. **Amount funding:** INR. 8,24,000
7. **Duration of the Project:** 2year
8. **Starting date of the Project:** Apr 2007 to Apr 2009

9. **Project Objectives:**

The project objective was to develop computer models to assist the protection engineer in the uninterrupted supply from utility to consumer end in real time using artificial intelligence techniques. Line faults in a power system are a major concern for Engineers working in the power generation, transmission and distribution. Despite the efforts to prevent faults within the system they occur frequently and without warning. Quick action must be taken to determine the exact nature and location of these faults so that the proper action can be taken to restore the system. To improve the speed and accuracy of the fault diagnosis process, a software tool, based on a Logic Based System was proposed to develop.

10. **A brief Overview:** ---

11. **Infrastructure created from the Project:** ---

12. **Project Outcomes:**

i) Ph. D. Supervision:

- Dr. Md. Abul Kalam, "Intelligent Technique Based Protection Schemes for Power Transmission System", 2014.

ii) M. Tech. Dissertations:

- Ahmed Sharique Anees, "An Intelligent Approach For Fault Identification On Transmission Line", 2009
- Sanjeev Sharma, "Fault classification of three phase transmission system using wavelet transform", 2009.
- J. E. Jasmine, "Fault identification in high voltage transmission using ANN" 2008.
- Amit Sharma "Solving Distribution System Overload Contingency Using Fuzzy Multi-Objective Approach Considering Customer Load Pattern", in 2008.
- Sami Ahmad, Improved distribution system protection scheme, 2008
Md. Azad Hussain , An intelligent approach for classification and location of transmission line faults, 2008

List of Publications based on Project related work:

- i) Majid Jamil and Amit Sharma, "Distribution system contingency using coloured Petri nets", International Journal of Engineering Research & Industrial Applications, Vol. 1, No. 3, pp – 1-18, 2008.
- ii) Majid Jamil and Bal Krishna, "Fuzzy logic based fault classification and localization scheme for digital distance protection", National Conference on Power System Analysis, Control and Optimization, Vishakhapatnam, March 13-15, 2008.
- iii) Majid Jamil and Amit Sharma, "Solving Distribution System Overload Contingency Using Fuzzy Multi-Objective Approach Considering Customer Load Pattern" accepted to present in World Congress on Engineering and Computer Science 2009 (WCECS 2009) at San Francisco, USA, to be held on 22-24 October 2009".
- iv) Majid Jamil and Amit Sharma, "Solving Distribution System Overload Contingency Using Fuzzy Multi-Objective Approach Considering Customer Load Pattern" accepted to present in World Congress on Engineering and Computer Science 2009 (WCECS 2009) at San Francisco, USA, to be held on 22-24 October 2009".
- v) Majid Jamil, M. Rizwan, Md. Abul Kalam and A. Q. Ansari, "Generalized Neural Network and Wavelet Transform based Approach for Fault Location Estimation of a Transmission Line", Applied Soft Computing (Elsevier), UK, Vol. 19, pp. 322-332, 2014. ISSN: 1568-4946, Impact Factor: 2.14.
- vi) Majid Jamil, M. Rizwan, Md. Abul Kalam and A. Q. Ansari, "Wavelet-FFNN based Fault Location Estimation of a Transmission Line", Electrical Engineering Research (EER), an International Refereed Journal, USA, Vol. 1, No. 3, pp. 77-82, 2013. ISSN: 2327-7254 (print), 2327-7564 (online).
- vii) Majid Jamil and Amit Sharma, "Distribution system contingency using coloured Petri nets", International Journal of Engineering Research & Industrial Applications, IJERIA, India Vol. 1, No. 3, 2008, pp – 1-18.
- viii) Majid Jamil, "Intelligent Protection of Transmission line Using Fuzzy Logic", Electrical India, Vol 50, No2, February 2010, pp 60-65.
- ix) Majid Jamil, Md. Abul Kalam and A.Q. Ansari, "Wavelet based ANN Approach for fault location on a transmission line", Proceedings of International IEEE Conference on Power Electronics Drives & Energy Systems (PEDES 2010 - Power India) organized by IIT Delhi, India during 21-23, December, 2010.
- x) Majid Jamil, Md. Abul Kalam and A.Q. Ansari, "Fault Classification of Three Phase Transmission Line Using Fuzzy Logic", Proceedings of National Conference on Recent Advances in Electrical and Electronics Engineering, RAEEE-09, NIT Hamirpur, during 23-24, December, 2009.
- xi) Majid Jamil, Md. Abul Kalam and A.Q. Ansari, "Intelligent Protection Scheme of Three Phase Transmission line", National Conference on Power Electronics & Intelligent Control (NCPEIC2012), MNIT Jaipur, during 1-2, November, 2012.

Faculty of Engineering & Technology Department of Electrical Engineering

1. **Name of the Department:** Electrical Engineering
2. **Project Title:** Development of Intelligent Protection scheme for power transmission system.
3. **PI:** Prof Mini S. Thomas



4. **Co-PI:** Nil
5. **Funding Agency:** AICTE
6. **Amount funding:** INR. 10,59,000
7. **Duration of the Project:** 2year
8. **Starting date of the Project:** 2007

9. **Project Objectives:**

- Channel modeling done for the indoor low voltage powerline cable using MATLAB / Simulink.
- Impulsive burst noise with coloured background noise used for the noise model.
- Communication system designed in MATLAB /Simulink with each block simulated as a different subprogram.
- Performance of the coded system determined based on the bit error rate (BER) performance of the OFDM system under impulsive noise.
- Network performance analysis performed on real Broadband powerline equipments using measurements.

12. **Project Outcomes:**

Shabana Mehfuz, Reetu, Mini S. Thomas, “Development of wireless sensor network for distribution system management”, International Conference on Control, Communication and Power Engineering at Chennai, India.

Faculty of Engineering & Technology Department of Electrical Engineering

1. **Name of the Department:** Electrical Engineering Department
2. **Project Title:** Resilience mechanism for mobile ad Hoc network.
3. **PI:** Dr. Shabana Mehfuz



4. **Co-PI:** Nil
5. **Funding Agency:** AICTE
6. **Amount funding:** INR. 9,50,000
7. **Duration of the Project:** 2 Year
8. **Starting date of the Project:** 2012
9. **Project objectives:**

Analyse and quantify the impact of different types of challenges and failures on normal network service operation. Examining existing survivable approaches for MANETs. Study metrics, classes of network resilience, policies and ways to negotiate them.

Identification of survivability key properties and requirements for MANETs.

Proposal of a new classification of defense lines. Developing resiliency-oriented algorithms which maintain survivability attributes in MANETs.

Simulating and validation of proposed algorithms. Explore the survivability performance of devised solutions.

Developing metrics and synthetic intrusions to assess performance and over head of proposed resilience mechanisms for MANET

10. **A brief overview of the project:**

The wireless arena has been experiencing exponential growth in the past decade. There have been great advances in network infrastructures, growing availability of wireless applications, and the emergence of omnipresent wireless devices such as portable or handheld computers, PDAs, and cell phones, all getting more powerful in their capabilities. These devices are now playing an ever-increasingly important role in our lives. Mobile users can rely on their cellular phone to check e-mail and browse the Internet, travellers with portable computers can surf the internet from airports, railway stations, cafes, and other public locations, files or other information can be

exchanged by connecting portable computers via wireless LANs while attending conferences, and at home.

11. [Infrastructure created from the project:](#)

12. [Project outcomes:](#)

Due to their communication type and constraint resources, Mobile Ad Hoc networks are vulnerable to diverse types of attacks and intrusions. Wireless communication, for example, is susceptible to interferences and interceptions. Portability has made devices each time smaller, with resource limitation and thus easy targets for overload attacks.

The fully network decentralization, absence of support infrastructure and dynamic topology increase the vulnerability to many attacks such as impersonation, Sybil, selective forwarding, blackhole, wormhole among others.

Survivability refers to a system capability of completing its goals and requirements in a timely manner in face of attacks, intrusions, failures or accident. In general, these faults abuse of existent system vulnerabilities, introduced accidentally or deliberately during the development of the system. An attack can successfully exploit system vulnerabilities resulting in an intrusion.

13. [Benefits from the project to the society:](#)

This project is intends to develop preventive, reactive and tolerant approaches which operate together to provide a survivable MANET.

14. [Any other information you may think is important in this regard:](#) --

Faculty of Engineering & Technology Department of Electrical Engineering

1. **Name of the Department:** Department of Electrical Engineering
2. **Project Title:** Development of Autonomous Miniature Unmanned Aerial Vehicle as Disaster Management Tool
3. **PI:** Dr. Shahida Khatoon



4. **Co-PI:** Prof. Ibraheem
5. **Funding Agency:** UGC
6. **Amount funded:** INR 9,17,200/-
7. **Duration of the Project:** 2009-2011
8. **Starting & Completion date of the Project:** 01/05/2009

9. **Project Objectives:**

The project has developed an avionics system for an experimental unmanned aerial vehicle for testing the autonomous flight control algorithms capable of accomplishing disaster management activities autonomously which are taken as geographical aerial survey in our case. The radio controlled UAV enables the vehicle to perform aggressive manoeuvres completely autonomously to obtain a highly valuable observation platform. An onboard computer/microcontroller system is designed to collect aerodynamic information through a set of sensors in order to autonomously direct the UAV along its flight plan. This computer is wirelessly connected to the computer at the base station and the two systems together achieve the autonomous manoeuvring of the experimental UAV. A set of sensors composed of wireless camera, Global Positioning system (GPS), wireless transmitter receivers, communication protocols to gather information. A system for monitoring the map of the flight plan and executing it autonomously from the base station Global Positioning System (GPS).

The electronic control system consists of a micro controller system on-board the UAV to control the operation of the UAV according to the development of the flight plan and actual mission assigned to the UAV. Base station is a system on the ground to monitor the mission development, this should be wirelessly connected to the flight computer for information exchange. The communication infra structure constitutes a mixture of communication mechanisms (radio, zigbee, blue tooth, wi-fi, modems, satellite communication, microwave links etc.) to link the UAV and the base station

10. Brief Overview of the Project:

In order to enable a mini-UAV to perform target acquisition, localization and continuous surveillance in real world environment there is a need to develop a technology which may be a combination of aircraft engineering, control systems, and wireless communication. The major limiting factors in developing the capabilities of small low cost UAVs are connectivity, computational processing power and lack of resource integration. To overcome these limitations in this research an attempt has been made to assemble an experimental fixed wing prototype glider plane capable of being remotely controlled in the range of 20 meters. The motivation of this research is to develop a simple flying machine from scratch, designing each and every module and then providing the control by embedding electronic circuitry on-board.

11. Infrastructure created from the project:

Three working models of UAV have been designed and tested for autonomous flight control, namely fixed wing model, helicopter model, quad-rotor model

12. Project outcomes:

A Ph. D has been awarded entitled “Minimally Controlled aerial vehicles for geographical survey application” to Mr. Dhiraj Gupta in 2014

The project outcomes are represented in the following research papers:

- i. “Design and Assembly of an Experimental Fixed Wing Remote Controlled Glider Plane”, International Journal of Applied Mechanics and Materials, special issue on Aerospace Engg.(ISSN: 1662-7482) July, 2011, Vol. 110, pp. 1582-1588.
- ii. “Design and Development of Quad Rotor Type Unmanned Aerial Vehicle (UAV)”, International Journal of Frontiers in Aerospace Engineering, USA.
- iii. “Designing of Quad- rotor for Surveillance: Maximizing Fight Time using Soft Computing Techniques”, International Conference on Recent Trends in Information Technology and Computer Sciences (ICRTITCS 2011), Dec. 9-11, Mumbai, India.
- iv. “Minimally Controlled Aerial Vehicles Communication Methods to Improve Links” National Conference on Recent Developments in Computer Application (NCRDCA09), Jamia Hamdard, New Delhi, India. August 12-13, 2009.
- v. “Wireless Camera Range and Performance Testing by Designing an Experimental Parachute” National Conference on Recent Advances in Electrical & Electronics Engineering, RAEEE-09, NIT- Hamirpur, pp. 261- 268, 23-24 Dec, 2009.
- vi. “Assembly of an experimental Quad-Rotor Type UAV for testing a novel autonomous flight control strategy” International Journal of Advanced computer research, Vol. 3, No. 4, Issue Dec, 2013, pp. 111-120.

13. Benefit from the project to the society:

Unmanned Aerial Vehicle (UAV) also called autopilot system is planes with no human driver required on-board and can aviate automatically under the control of some programs, or be remotely controlled by operators on the ground station.

The UAVs can make long distance navigation with the help of automatic pilot, program control system, remote control and measurement system, navigation system, etc. Compared with their manned counterparts, the UAVs have the advantages of light weight and space-occupancy, low cost , good concealment, thus is ad hoc excellent in executing the dull, dirty or danger (Tri-D) tasks. An autonomous unmanned aerial vehicle (UAV) is used in hazardous situations where conditions are appalling for example natural disasters like floods, human fights etc. can create threats to human life there. They are also used for aerial survey and remote data collection applications that require cost effective better controlled UAV.

Faculty of Engineering & Technology Department of Electrical Engineering

1. **Name of the Department:** Department of Electrical Engineering
2. **Project Title:** Development of wireless sensor network for health and security monitoring in old age homes
3. **PI:** Dr. Shahida Khatoon



4. **Co-PI:** Prof. Ibraheem
5. **Funding Agency:** DST
6. **Amount funded:** INR. 11,00,000
7. **Duration of the Project:** 3year
8. **Starting and Completion date of the Project:** 2010-2013

9. **Project Objectives:**

The project is intended to develop a wireless sensor network for health data monitoring of elderly people. To improve the accuracy in the estimation, the medical health data of elderly people is gathered through wearable medical sensors. This health information is transmitted at a central health station wirelessly. A software tool, based on telemedicine is developed to send this data to a nearby health facility, so that the doctors can have access to the medical health information all the time and the patient may be rushed to the hospital only when a medical expert finds it necessary.

10. **Brief overview of the Project:**

A wireless sensor network based on Zig Bee_Wi-Max hybrid communication protocol is developed in this project. This system is used for implementing telemedicine system which could be used as an information gateway between old age homes and nearby hospitals, for the purpose of transmitting health data wirelessly over a distance of about 20 km range. This system is developed in two separate modules, one consisting of Zig Bee based WSN which is applied for wireless data transmission up to a distance of two kilometers, and the other comprises of Wi-Max based WSN used to transmit data up to a distance of twenty kilometers.

11. **Infrastructure created from the project:**

- a. Procurement of wearable medical sensors namely Pulse Oximeter, Heart Rate Monitor, Motion Detector, Temperature sensor.

- b. Interfacing the medical sensors with ATmega 16 microcontroller boards for digital data processing so that the medical sensors can be made accessible by the wireless network.
- c. Connecting the microcontroller boards with ZigBee X-pro module for wireless transmission of medical data over a distance up to 700 meters.
- d. Interlinking ZigBee routers to extend the distance range of data transmission.
- e. Interfacing Zigbee routers with Wi-Max transceiver to transmit data over a distance of 30 Km wirelessly.
- f. Testing and validation of hybrid network.

12. **Project outcomes:**

With the use of wireless sensor technology, it has been shown that the health data can be transmitted from the patient room to a server room, without having to run additional cables through the two destinations. The developed circuit detects medical information of patient transmits the data wirelessly over a range of two kilometres by means of ZigBee module. The ZigBee wireless sensor network have been successfully tested giving ATmega micro controller distant data monitoring and control.

Experiments have proved that signals can be well transmitted in the whole floor from upstairs to downstairs with good communication quality. And penetrating ability of signals less than 2.4 GHz is higher than that in other bands. The distance range of the proposed ZigBee wireless sensor network is tested successfully for a distance upto 700 m. The distance range is extended using Wi_Max technology up to fifty kilometres. This ZigBee-Wi_Max hybrid wireless communication module has been tested successfully for a distance up to two km.

As Wi-Max technology comes under point-to-point communication protocol, it can give a distance range up to fifty km if its antennas are mounted on a high rise tower with clear line of sight. The basic advantage of the developed WSN telemedicine system is that the monitor nodes can easily be added or removed in the system, it is also convenient to expand the network. As an expansion of existing wired health monitoring system it can enhance the flexibility of information collecting, while reducing the cost of medical data transmission and communication network in residential buildings. So it improves the applied value of safety monitoring and practical value of control information system.

A research paper entitled “Development of ZigBee-WiFi-Wi-Max Hybrid Wireless Sensor Network based Telemedicine System”, Published in December 2013 issue of International Journal of Computer Applications (IJCA).

A Ph. D has been registered entitled “Design and development of a telemedicine system” Mr. Manoj Kumar Singh, 2012.

13. **Benefit from the project to the society:**

The developed medical system is unique in nature as it addresses the possibility of connecting village dispensaries with the nearby big hospitals, and Urban residential societies with local hospitals. There are several trends in the healthcare and wellness areas that may potentially reshape the medical, and fitness industries. The shift from reactive to proactive healthcare and wellness is fuelling an increased vigilance and service applications in targeted fitness and chronic disease management. Additionally, increased adoption of connectivity and communication technologies is enabling remote health and wellness services on a much wider scale. The missing piece of this puzzle is wireless connectivity and more specifically, low power wireless connectivity. The low power wireless component preserves mobility while the low-power component ensures that sensing and monitoring devices preserve our independent lifestyle.

The ZigBee Health Care public application profile is designed from the start with the use cases taking these current trends into account. ZigBee Health Care can be implemented to create a scalable network of low-power wireless nodes specifically designed to sense and monitor the health and well being of individuals in applications that include chronic disease management, fitness, and aging independently.

The ZigBee Health Care inherent traits that make such applications possible include very low power use, flexible network topologies, data communication security, and wireless license-free bandwidth publically available everywhere in the world, and a robust ecosystem of technology suppliers and product manufacturers that ensure a consistent parts supply and strong competition creating the economies of scale needed to allow for the rapid introduction of wireless sensing and monitoring for health care. This unique combination of benefits resented by ZigBee Health Care eliminates barriers and allows the industry, governments and individuals to embrace this critical piece in reducing health care costs. It also creates a new class of tools that deliver vital lifesaving and life affirming benefits that can serve humanity. In hospital, because ZigBee network are less likely to cover long-distance, Wi-MAX takes the responsibility.

In this project, we would like to propose a hybrid system integrating ZigBee and Wi-MAX which can have high capacity, high mobility, large coverage, low cost, reliability and effectiveness. With Wi-MAX, the long-distance transmission, no matter LOS (Line-of-Sight) or NLOS (No-Line-of-Sight) is guaranteed.

Each small-area health information centre can get access to Wi-MAX network without physically connecting the laptop to a wall jack. For areas without pre-existing physical cable or telephone networks, Wi-MAX may be a viable alternative for broadband access between remote ZigBee networks and hospital information centre that has been economically unavailable. In the Zig Bee_Wi-Max hybrid

wireless system first low distance information (within old age home) will be transmitted wirelessly using ZigBee technology. Then this information will be passed on to a nearby hospital using Wi-Max communication protocol. The performance of the hybrid system will be evaluated based on numeric result of testing

Faculty of Engineering & Technology
Department of Electrical Engineering

1. **Name of the Department:** Department of Electrical Engineering
2. **Project Title:** On Chip 3D Simulator for Network-on-Chip (NoC)
3. **PI:** Dr. Abdul Qayyum Ansari



4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 8, 94,000
7. **Duration of the Project:** 2 year
8. **Starting and Completion date of Project:** 2011-2013

9. **Project Objectives:**

The objectives of the proposed project are as following(s):

1. To study the various network topology
2. To study the various types routing strategy
3. To build a simulator based on the hardware and software co-design approach

12. **Project Outcomes:**

We have been able to produce two patents (applied), published books and papers in various refereed journals and conferences

13. **Benefit from the project to the society:**

The contribution to the scientific society is in the terms of new techniques for virtual channels, routing and 3-D NoC infrastructure management. One Ph. D has been produced in the area of Network-on-Chip. Now, other students are also start working in this area. Also, we have created a state-of-art in the area of Network-on-Chip.

14. **Any other info:**

Ph. D. ENROLLED/PRODUCED OUT OF THE PROJECT: Produced: Dr. Mohamad Ayoub Khan, Enrolled: Mohammad Rashid Ansari

Faculty of Engineering & Technology

Department of Electrical Engineering

1. **Name of the Department:** Department of Electrical Engineering
2. **Project Title:** Sol-gel ceramic thin film for sensing application
3. **PI:** Prof Tarikul Islam



4. **Co-PI:** Prof S.S Islam
5. **Funding Agency:** Department of atomic energy (DAE), board of research in nuclear science
6. **Amount funded:** INR. 34,00,000
7. **Duration of the Project:** 3years
8. **Starting date of the Project:** 21/04/2011 to 30/6/2014
9. **Project objectives:**

To study the Sol-Gel science to form the porous ceramic material of nano pores.

Formation of the thin film of porous ceramic on ceramic substrate by dipcoating/spin coating. Characterization of porous structure of the film to determine (a) pore morphology (b) crack (c) mechanical strength (d) contact angle measurement using SEM, AFM, Raman spectroscopy and Ellipsometry method.

Formation of the parallel capacitive sensor for sensing gaseous species and its characterization to determine the electrical parameters of the sensor.

The steps involve fabricating the sensor: (a) metal electrodes on the ceramic substrate, (b) deposition of thin film sensing layer and (c) formation of another porous electrode.

10. **A brief overview:**

Sol-gel has arisen as a method of fabrication of high quality ceramics. In recent years this technique has been extended to the fabrication of thin film or coatings on different substrate compared to conventional thin film forming process such as evaporation, sputtering or chemical vapour deposition, the cost of sol-gel processing is low. However, the most important advantages of sol-gel processing over conventional coating methods are easier fabrication of films or coating of complexes oxides and easier control of composition and microstructures of the deposited coating. Colloidal particles are regarded as having dimensions within the range 1-100nm for making dense and nanoporous film. The hydrolysis and precipitation of inorganic salts in an aqueous solution allow the synthesis of oxide colloids. These are subsequently redispersed in the dilute aqueous acids or water, to produce colloidal sol. A number of sol types can be prepared in this way including Al_2O_3 , SiO_2 , TiO_2 ,

ZrO₂ & CrO₃ which would be used for developing gas and moisture sensors. Sol-gel thin film nanocapacitive sensor has not yet been used rigorously for measuring commercial sensor. Sol-gel methods have been proposed for several uses as fast ion conductors, optical films and compositions. However, the sol-gel method is not explored much for making device for sensing applications. Also, there is no Indian technology for measurement of trace moisture in different gaseous environments for different industrial applications. This project is aimed to develop a trace moisture measurement system by sol-gel method.

11. [Infrastructure created from the project:](#)

list of equipments:

- A) Chilled mirror hygrometer,
- B) Automatic dip coating system
- C) Ph meter
- (d) High temperature programmable furnace
- (e) Chemical work bench
- F) Precision regulator, g) volume flow meter
- H) Millipore water purifier
- i) Online ups 3kva, desktop pc
- j) DSO, Function generator, hand held LCR meter, power supply, digital multimeter, analog multimeter

12. [Project outcomes:](#)

- (a) A digital hygrometer for measuring moisture in the range of 0-100 ppm has been successfully developed.
- (b) Detection electronics and signal conditioning circuit has also been developed.
- (C) One student is perusing Ph.D. on this topic and three students completed M. Tech Thesis works
- (d) 10 research articles have been published in the research work.

13. [Benefits from the project to the society:](#)

The system can be useful for measuring the moisture in gaseous environment in ppm level. This can be useful for addressing the reliability issues of semiconducting devices. The hygrometer may be useful for the monitoring of moisture of insulated gas in gas insulated substation (GIS) for its reliable operation. It has the potential to measure moisture in different key gases used in different industrial applications

14. [Any other information you may think is important in this regard:](#) --

Faculty of Engineering & Technology

Department of Electrical Engineering

1. **Name of the Department:** Department of Electrical Engineering
2. **Project Title:** Pore Morphology Studies of Porous Silicon to Measure Moisture content in Dry Gas in ppmV to ppb V.
3. **PI:** Prof Tarikul Islam



4. **Co-PI:** Prof S.S Islam
5. **Funding Agency:** DST
6. **Amount funded:** INR. 40,00,000
7. **Duration of the Project:** 3years
8. **Starting date of the Project:** 14/05/2008 to 13/05/2011
9. **Project objectives:**
 - (i) To study the dependence of sensitivity and selectivity of different pore morphology PS layers for sensing humidity in the range of lower ppbV to ppmV.
 - (ii) Different pore morphologies PS layers will be formed by selecting suitable etching parameters like initial resistivity of the p type single crystal silicon wafer, hydrogen fluoride concentration (HF), formation current density and etching time.
 - (iii) Characterization of PS layers for determining the porosity, dimension of silicon nanocrystal, thickness of the PS layers and dimensions of the pores using SEM, AFM and Raman spectroscopy.
 - (iv) The different pore morphologies PS layers will be characterized for determining the sensing parameters like, sensitivity, response time, recovery time, repeatability, hysteresis, drift due to aging.
10. **A brief overview:**

There are many unsolved question that require in depth study of the properties of morphologies of porous silicon nanostructure in sensing moisture in dry gas. An extensive study will be made to show that the surface to total volume ratio and hence the nanocrystal volume to total volume ratio have significant influences on the charge transport and effective electrical and optical properties of porous layers in presence of moisture absorbed on the porous layer. Conventionally, the physical parameter 'porosity' is generally used to describe the degree of porous nature of porous layer. However, it must be emphasized that different pore branching can be described suitably by the 'uniformity factor'. It is thus obvious that, in addition to the nature of transport mechanism in PS nanocrystals, the microstructure / morphology plays a vital role in the determination of the effectivity. The microstructure depends

not only on a number of parameters like surface roughness, resistivity, doping type, and density of the substrate but also on the electrochemical preparation conditions controlled by anodizing current density, concentration of HF (hydrogen fluoride) solution in the formation bath. These might be properly adjusted to give the resulting PS the desired range of electrical and optical properties. In this project, a systematic effort will be made to study the dependence of both electrical and optical properties of porous silicon layer on the porosity and uniformity of the layer controlled by the formation parameters for sensing water vapor.

11. [Infrastructure created from the project:](#)

- (A) Impedance Analyzer (4294A, 40Hz-110 MHz) with software, Agilent Technology, USA.
- (B) Dewpoint meter LPDT-100 (Zentaur Corporation, USA)
- (C) Data acquisition card + software flowcode, UK
- (D) Manual screen printing equipment, (USA)
- (E) Spin coater

12. [Project outcomes:](#)

- (A) Porous silicon (PS) which is an IC compatible material for vapour sensing has been utilized for measuring humidity in different range.
- (B) Some issues of PS based sensor such as drift, nonlinearity, and hysteresis have been addressed by the soft computing technique
- (C) A Prototype instrument has been made
- (d) 10 research articles in the peer reviewed international journals and 12 international and national conference papers have been published

13. [Benefits from the project to the society:](#)

It is a device which can help society in different way. It can help to assess the quality of food, drugs, AND RELIABLE operation of different system like nuclear power plant, alternator, switch gear and protection etc.

14. [Any other information you may think is important in this regard:](#)

Faculty of Engineering & Technology
Department of Applied Sciences & Humanities

1. **Name of the Department:** Department of Applied Sciences & Humanities
2. **Project Title:** Electronic Absorption Studies of Substituted Aromatic Hydrocarbons and Their Cations of Astrophysical Interests.



3. **Project Investigator:** Dr. Mohd Mudassir Husain.
4. **Co-Investigator:** None
5. **Funding Agency:** Department of Science and Technology (DST).
6. **Amount funded:** INR 9, 72,000.00
7. **Duration of the project:** 3 years.
8. **Starting and completion date of the project:** November 18, 2004 to November 17, 2008.
9. **Project objectives:**
 - a) To setup experimental facility for measurement of electronic absorption spectra of substituted aromatic hydrocarbons of astrophysical interests
 - b) Setting up computational facility for simulation of physical parameters of the molecular systems.
 - c) To compare the experimental and computational data with the available astrophysical data.
10. **A brief overview of the project:**
 - a) The main aim of the project was to identify the polycyclic aromatic hydrocarbons responsible for the DIBs. We have carried out detailed investigations both experimental and theoretical on various polycyclic aromatic hydrocarbons (neutral and ionized) in order to identify if any band of these systems matches with the known band of DIBs.
 - b) For the first time we have simulated the calculation of the aromatic system in boric acid glass so as to take into account the perturbation caused by the environment, while comparing our theoretical result with the experimental value which are performed in the boric acid glass.
 - c) We have been able to identify the six bands of neutral and ionized chrysene and methyl substituted chrysene which shows close matching with the DIBs.
 - d) Experimental facility for preparing, irradiating and measuring UV/VIS spectra PAHs in boric acid glass has been setup.
 - e) Computing facility for molecular modelling has been setup and the structural and electronic properties are computed for large number of PAHs. As most of the DIBs occur in IR region this study can further be extended to IP regions to investigate if any IR bands for these and similar systems show any resemblance with the known DIBs. For this region, a FTIR spectrophotometer and powerful computing facility is

required, so that ab initio and DFT calculations which are more robust, accurate and reliable can be performed, for better understanding the the role of PAHs in astrophysics.

11. **Infrastructure created from the project:**

- Set up experimental facility for measurement of electronic absorption spectra of substituted aromatic hydrocarbons of astrophysical interests
- Set up computational facility for simulation of physical parameters of the molecular systems.

12. **Project outcomes:**

1.	Computation of structural and electronic properties of single wall II-VI compound nanotubes. ,Physica E, Low Dimensional Systems and Nanostructures 41(2009) UK	Mudassir M. Husain
2.	Singlet and Doublet States UV-Visual Spectra and Electronic Parameters of 3-Methylchrysene and 4-Methylchrysene in Glass Matrix.,Spectrochemica Acta Part "A" 69 (2008) UK	Mudassir M. Husain , H.C. Tandon , Pradeep R. Varadwaj
3.	Measurement and Theoretical Characterization of Electronic Absorption Spectra of Neutral Chrysene (C ₁₈ H ₁₂) and Its Positive Ion in H ₃ BO ₃ Matrix.,Spectrochemica Acta Part "A" 68 (2007) UK	Mudassir M. Husain
4.	Molecular electronic properties and vibrational characteristics of PCCN...HX/DX (X=F, Cl, Br) in intermolecular complexes, Chemical Physics Letters, 424, 4-6 (2006) 227-233 UK	Pradeep R. Varadwaj, <u>Mudassir M. Husain</u>
5.	Computation of Electronic Absorption Spectra and spectral Properties of Neutral 1-methyl Chrysene and its positive Ion in H ₃ BO ₃ Matrix by AM1 and PM3 Methods. Asian J. of Chem 20, 2 (2008)	<u>Mudassir M. Husain</u> , H.C. Tandon
6.	On the measurement and computation of electronic absorption spectrum of neutral and ionized 2-methyl chrysene. Topical Conference on Atomic, Molecular and Optical Physics" (TC-2008) , Sardar Patel University, Gujrat (January 3-5, 2008)	Mudassir M. Husain
7.	Assignment of α , p , β and β' bands in the measured electronic absorption spectra of Chrysene and its methyl derivatives on the basis of Clar's method. First Asian Spectroscopy Conference , IISc, Bangalore, (Jan 29-Feb 3' 2007)	Mudassir M. Husain

13. **Benefit from the project to the society:**

- Set up experimental facility for measurement of electronic absorption spectra of substituted aromatic hydrocarbons of astrophysical interests.
- Set up computational facility for simulation of physical parameters of the molecular systems.

Faculty of Engineering & Technology
Department of Applied Science & Humanities

1. **Name of Department:** Department of Applied Science & humanities.
2. **Project Title:**
 - i. Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching.
 - ii. Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological species.
 - iii. Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing.
 - iv. Raman Investigation of Carbon Nanotubes for Gas Sensing Applications.
 - v. Development of Carbon Nanotube based Gas Sensor.
3. **Project Investigator:** Prof. S. S. Islam.
4. **Co-Investigator:** Prof Tarikul Islam
5. **Funding Agency:**
 - i. Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching sponsored by Department of science and Technology, Ministry of Science & Technology, Govt. of India.
 - ii. Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological specie' sponsored by Department of Information & Technology (DIT), Govt. of India.
 - iii. Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing sponsored by Department of Science & Technology (DST), Govt. of India.
 - iv. Raman Investigation of Carbon Nanotubes for Gas Sensing Applications sponsored by CARS (DRDO), Govt. of India.
 - v. Development of Carbon Nanotube based Gas Sensor sponsored by Department of Information & Technology (DIT), Govt. of India.
6. **Amount Funded:**
 - i. Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching – INR 17.42 Lakh.
 - ii. Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological specie—INR 100.39 lakh.
 - iii. Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing –INR 36.85 lakh
 - iv. Raman Investigation of Carbon Nanotubes for Gas Sensing Applications –INR 19.8 lakh
 - v. Development of Carbon Nanotube based Gas Sensor –INR 452.7 lakh
7. **Duration of project:** Three Year for All.
8. **Starting and Completion Date of Project:**
 - i. Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching --2007-2010.
 - ii. Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological specie—2007-2010.

- iii. Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing –2010-2013.
- iv. Raman Investigation of Carbon Nanotubes for Gas Sensing Applications—2010-2013.
- v. Development of Carbon Nanotube based Gas Sensor -- 2010-2013.

9. Project Objective:

- i. Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching.
- ii. Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological specie:
 - A. Fabrication of porous silicon by electrochemical anodization, laser-induced chemical & electrochemical etching process with permutation of its different parameters, i.e. current density, duration, electrolyte concentration and under photon illumination with different wavelength.
 - B. The pore morphology is an important criterion and it should be specific to the physical & chemical nature of the sensing analyte. Post etching surface treatment is also crucial and has been taken care of.
 - C. Next step is the characterization of the porous structure, i.e. pore size, pore depth, surface nature etc. and it has been done by Raman, PL, FTIR, SEM, and AFM studies and discussed subsequently.
 - D. Fabrication of porous silicon based sensor for sensing organic vapours like methanol, ethanol, NH_3 and biological samples.
 - E. Optical and electrical measurements were done for testing the sensing response. A detailed analysis was made for sensing linear aliphatic chains of alcohol including ethanol, toxic NH_3 gas and biological sample protein.
 - F. the sensors were tested under critical conditions. Various stability and selectivity studies were performed for complete analysis of the sensors.
 - G. Developed prototype sensors for ethanol and ammonia(NH_3).
- iii. Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing.
- iv. Raman Investigation of Carbon Nanotubes for Gas Sensing Applications.
 - A. Micro-Raman Spectroscopy of as-grown CNTs for optimization of growth parameters.
 - B. Temperature and Raman excitation power dependence of Raman modes in CNT to measure the strain dependence of the phonon frequencies.
 - C. Micro-Raman Spectroscopy of SWNT after purification and functionalization.
- v. Development of Carbon Nanotube based Gas Sensor.

10. A brief overview of the project:

- i. Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching.
- ii. Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological specie.

We have looked into the application of porous silicon as a sensing device for chemical and biological species. The porous silicon has several unique features like – large surface to volume ratio, controllable pore sizes, convenient surface chemistry, and compatibility with conventional silicon microfabrication technologies. Using its

photoluminescence (PL) emission properties in the visible region it makes possible to monitor the presence of chemicals or biological agents by looking at light scattering from the crystals under the environment of the target species. Photoluminescence of the porous silicon is monitored using photoluminescence spectroscopy. Upon exposure to organic solvents, toxic gas, and biological samples the emission maximum intensity is significantly decreased, alongwith the wavelength shift to higher or lower wavelength depending on the chemical nature of the molecules. Within seconds of the removal of the solvent, the original intensity is recovered and further exposure of the porous silicon to organic solvents will again result in quenching of the luminescence. Quenching by solvents /gas indicates that the solvent interactions reduce carrier trapping in silicon. The measurement of the wavelength shifts and change in PL intensity in the environment of target species makes possible the highly sensitive detection, identification and quantification of small analyte (solvent/vapour/gas) molecules. Based on these concepts said above, the following objectives were laid down to study the capability of porous silicon as a sensing device:

- a) Growth of nanostructured porous silicon.
- b) Sensing of foreign species in the nanostructure.
- iii. Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing.
- iv. Raman Investigation of Carbon Nanotubes for Gas Sensing Applications :

The proposal is aimed for optical characterization of carbon nanotubes [CNT] by Micro-Raman spectroscopy to utilize its electronic properties for gas sensing applications. The primary criteria to achieve CNT based sensor is to make device grade CNT from as-grown CNTs which contain a great deal of defects and impurities. Literature survey shows that it is a serious matter for device applications and it needs sincere attention and some post treatment works when use of this material is concerned to make sensor device. Besides, the quality of pristine CNTs varies depending upon the growth technique and the growth parameters. It is expected that the as-grown CNTs should be free from defects and impurities. But in reality, it is not and it needs to be purified and processed through chemical/physical or both the roots so that the right device grade material can be prepared for electronic applications. Therefore, surface treatment is required to improve the surface reactivity through cleaning, stabilization and functionalization processes to achieve the said objectives.

Raman Spectroscopy, in fact, a very powerful tool, provides information in the nanoscale in the lattice. By analysing the Raman active modes, it will be possible to optimize the effective various process parameters on the structural properties like diameter of the CNT, its chirality, type, surface defect and inhomogenities in the structure. Even during surface treatment the defects may be created and these may be traced out by Raman studies. It was agreed through MoU between two organisations that the Nanotechnology group at Solidstate Physics Laboratory, Delhi will be providing CNT samples to our group at JMI for obtaining raman data. The micro-Raman spectroscopic facility is available at Nano-Sensor Research Laboratory, Department of Applied Sciences & Humanities, Jamia Millia Islamia, New Delhi. The Raman characterization results will be provided to SSPL, Delhi to facilitate their R & D activities.

- v. Development of Carbon Nanotube based Gas Sensor

11. Infrastructure Created from the project:

- (1) Fabrication facility.
 - i) Experimental Electrochemical Anodization Facility
 - ii) Experimental Setup for Laser-induced chemical / Electrochemical etching
 - iii) Experimental Setup for Photo-Electrochemical (PEC) etching
2. Characterization facility.
 - i) HR Micro-Raman Spectrometer (LabRAM HR800 (Jobin Yvon, France))
3. Sensor testing facility.
 - i) Experimental setup for Sensing of chemical species (vapour/ gas) by electrical capacitive technique using (C-V analyzer (Keithley, 590))
 - ii) Experimental setup Sensing of chemical species (vapour/ gas) by optical (PL quenching) technique
 - iii) Experimental setup for bio-sensing by cyclic voltammetry technique

Process Developed:

1. The fabrication of porous silicon.
2. Spectroscopic and Microscopies Analysis of porous silicon.
 - i) Sample morphology studies of porous silicon
 - ii) Effect of anodization parameter on photoluminescence behaviour of porous silicon
 - iii) Raman spectroscopic investigation of porous silicon
3. Sensing studies by porous silicon.

12. Project outcome:

- (1) Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching
- (2) Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological species
 - Samples were fabricated by variation of many anodization parameters and techniques
 - Preparation of Samples by Photo-electrochemical Etching
 - Morphology studies by SEM & AFM
 - Morphology studies by Theoretical Fitting of Raman & PL Spectra
 - Morphology studies by SEM, AFM & FTIR
 - Morphology studies by Theoretical Fitting of Raman & PL Spectra
 - Capacitive sensing studies through electrical sensing setup
 - Design & Functioning of Photoluminescence Quenching Setup
 - Sensing studies of porous silicon by Photoluminescence quenching technique for sensing organic vapours
 - Porous silicon surface stability studies
 - Ethanol selectivity studies Investigation of presence of Protein by porous silicon
- (3) Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing
- (4) Raman Investigation of Carbon Nanotubes for Gas Sensing Applications

In many cases, functionalization of SWCNTs leads to variations of relative intensities in the characteristic RBM intensities compared to the starting material, i.e. unfunctionalized SWCNTs. Owing to the diameter dependence of the RBM frequency and the resonant nature of the Raman scattering process, chemical reactions that are sensitive to the diameter as well as the electronic structure (metallic or

semiconducting) of the SWCNTs can be sorted out. Here, chemistry can lead to a selective functionalization or to a complete removal (i.e. destruction) of a certain kind of SWCNTs.

(5) Development of Carbon Nanotube based Gas Sensor

- i. Surface treatment of CNTs has been done using ultra-sonication, refluxing and centrifuge techniques.
- ii. The following work has been carried out for making NH_3 gas sensors:
 - a. Design, development and testing of NH_3 gas sensors using raw/purified MWCNTs and SWCNTs.
 - b. Design, development and testing of composite thin film sensors using MWCNT/ Al_2O_3 .
 - c. Design, development and testing of polymer based MWCNT sensors.
 - d. Design, development and testing of sol-gel thin film based MWCNT sensors.
 - e. Design, development and testing of MWCNT/ SWCNT tape for NH_3 gas sensor by gel cast technique.
 - f. Resistive part of the sensor was confirmed by impedance spectroscopy.
 - g. The optimization of sensor parameters by gel cast technique using MWCNTs/SWCNTs has been done and some achieved specifications in brief for the developed sensor.

For NH_3 gas, Detection level: 100 ppb.

- Response time: ~ 20 minutes (approx.) at 30°C .
- Recovery time: 15-20 minutes (approx.) by using thermal heating & cooling cycle protocol $30-200-30^\circ\text{C}$.
- Sensitivity: 15% at 1 ppm and 37% at 5 ppm for NH_3 gas.
- Resolution: 0.1 ppm
- Experiment performed at room humidity 50%-80% RH, For NO_2 gas
- Detection level: 100 ppb.
- Response time: ~ 12 minutes (approx.) at 30°C .
- Recovery time: 10 minutes (approx.) by using thermal heating & cooling cycle protocol $30-200-30^\circ\text{C}$.
- Sensitivity: 32% at 1 ppm and 58% at 5 ppm for NO_2 gas.
- Resolution: 0.1 ppm.
- Experiment performed at room humidity 50%-80% RH

- iii. Prototype sensor design of gas sensor will be made and processed CNTs will be cast on the substrate with proper contacts for electrical characterization.

Prototype Sensor: Developed (YouTube link : <http://youtu.be/cUsVliPqllk>
<http://www.youtube.com/watch?v=cUsVliPqllk&feature=youtu.be>)

13. Benefit from the project to the society:

- (1) Spectroscopic characterization of semiconductor nano- structure fabricated by photoinduced electrochemical etching
- (2) Raman and Photoluminescence Investigation of Nanostructured porous silicon for sensing chemical and biological species

The project has helped in fabricating and testing ethanol sensors which are commonly known as alcohol sensors. These can detect the concentration of alcohol in the human bloodstream which is not only useful for the society but also forms a major lead in the research sector.

- (3) Investigation of Photoluminescence quenching mechanism in functionalized porous silicon for organic vapour sensing
- (4) Raman Investigation of Carbon Nanotubes for Gas Sensing Applications
Development of Manpower
- (5) Development of Carbon Nanotube based Gas Sensor

Faculty of Engineering & Technology
Department of Applied Science & Humanities

1. **Name of the Department:** Department of Applied Science & humanities
2. **Project Title:** Experimental Electronic Absorption, Fluorescence and theoretical Calculations of Laser Dyes



3. **PI:** Dr. Mohd Mudassir Hussain
4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 1,15,000.
7. **Duration of the Project:** 2yr
8. **Starting & Completion date of the Project:** May-2009 to May 2011
9. **Project objective:**

Dyes (coumarins) are used as active media in organic dye lasers. Most active coumarin derivatives are obtained by substituting the hydrogen of coumarin skeleton by various groups e.g. alkyls, amines, fluorines etc. This substitution changes the excited state dipole moment (μ_e) as well as the location of electronic absorption and fluorescence bands which in turns improves its solubility in organic solvents and modulate their resistance to chemical and photochemical protonation in certain environments. Ground (μ_g) and excited (μ_e) state dipole moments are important as they provide information about the change in electronic charge distribution upon excitation. A prior knowledge of dipole moments of electronically excited species is often useful in designing non-linear optical materials and elucidation of any photochemical transformations. The experimental values of dipole moments are also useful in parameterization of quantum chemical methods.

The main objective of this work is to experimentally measure the electronic absorption and fluorescence spectrum of different coumarins which has not been investigated earlier in different solvents, so that the ground and excited state dipole moments can be obtained from the data. We have also proposed to carry out theoretical values of dipole moments by

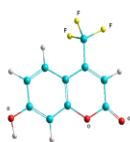
Semi empirical methods AM1 and PM3 so as to compare the experimentally determined results with the theoretical once.

10. A brief overview:

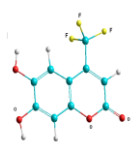
Laser dyes

- 1) 7-Hydroxy-4-trifluoromethyl coumarin (7H4TFMC)
- 2) 6,7-Dihydroxy-4-trifluoromethyl coumarin(67DH4TFMC) and
- 3) 7-Methoxy-4-trifluoromethyl coumarin(7M4TFMC)

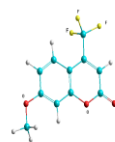
were purchased from Sigma Aldrich Chemicals USA. The absorption and fluorescence spectrum of these dyes were recorded in a number of solvents using Shimadzu-UV-Vis spectrofluorometer-UV2450 and Shimadzu-RF-5301PC spectrophotometer respectively. All the measurement were carried out at room temperature keeping dye concentration 10^{-4} M to 10^{-6} M in order to avoid self absorption. The optimized structures by semi empirical methods of these dyes are shown below



7H4TFMC



67DH4TFM



7M4TFMC

The experimental results obtained so are presented in the following Tables

Table 1

Solvent effect on the positions of absorption and fluorescence maxima of 7H4TFMC

S. No	Solvent	λ_a (nm)	λ_f (nm)	ϵ	n
1	Chloroform	335.3	414.0	4.81	1.442
2	n-Butyl Acetate	331.9	412.5	5.00	1.394
3	Ethyl Benzoate	335.6	410.0	5.99	1.503
4	Ethyl Acetate	330.9	410.0	24.30	1.372
5	CH ₂ Cl ₂	328.3	410.0	8.93	1.424
6	DMSO	338.8	434.2	47.24	1.479

7	Methanol	336.4	433.6	33.70	1.329
8	Formamide	339.2	441.0	111.0	1.447

Table 2

Solvent effect on the positions of absorption and fluorescence maxima of 67DH4TFMC

S. No	Solvent	λ_a (nm)	λ_f (nm)	\mathcal{E}	n
1	Toluene	353.2	450.5	2.38	1.497
2	n-Butyl Acetate	357.1	467.2	5.00	1.394
3	Ethyl Benzoate	360.9	468.5	5.99	1.503
4	Ethyl Propionate	358.3	470.3	5.58	1.380
5	Ethyl Acetate	355.6	472.2	6.08	1.372
6	Acetone	358.3	477.6	21.01	1.359
7	DMSO	371.2	513.7	47.24	1.497
8	DMF	372.4	511.9	37.00	1.426
9	Methanol	367.2	498.4	33.70	1.329
10	Acetonitrile	354.5	477.1	36.64	1.344
11	Formamide	373.6	510.1	111.0	1.447

Table 3

Solvent effect on the positions of absorption and fluorescence maxima of 7M4TFMC

S. No	Solvent	λ_a (nm)	λ_f (nm)	\mathcal{E}	n
1	n-Hexane	326.0	400.0	1.88	1.374
2	Cyclohexane	328.7	402.5	2.02	1.426
3	Toluene	333.7	411.1	2.38	1.497
4	Ethyl Benzoate	334.9	415.0	5.99	1.503
5	Decanol	333.7	412.9	8.00	1.437
6	CH ₂ Cl ₂	334.9	411.6	8.93	1.424

7	Octanol	333.7	412.0	9.80	1.429
8	Heptanol	333.4	416.1	11.30	1.424
9	Hexanol	334.1	413.4	1.418	1.418
10	Butanol	333.4	414.3	17.40	1.399
11	Ethanol	332.7	414.3	24.30	1.361
12	Formamide	336.4	420.6	111.0	1.447

λ_a and λ_f are wavelengths of absorption and fluorescence maxima, respectively .

Table 4

Photo-physical parameters of 7-Hydroxy-4-(trifluoromethyl) coumarin(7H4TFMC) in different solvents

S. No	Solvent	ν_a [cm ⁻¹]	ν_f [cm ⁻¹]	$\nu_a - \nu_f$ [cm ⁻¹]	$1/2(\nu_a + \nu_f)$ [cm ⁻¹]	$F_1(\epsilon, n)$	$F_2(\epsilon, n)$
1	Chloroform	28384	21344	7040	24864	.0370	.490
2	n-Butyl Acetate	28003	21404	6599	24703	.413	.471
3	Ethyl Benzoate	27708	21344	6364	24526	.430	.550
4	Ethyl Acetate	28121	21177	6944	24649	.492	.499
5	CH ₂ Cl ₂	27862	21868	5994	24865	.595	.584
6	DMSO	26939	19446	7163	23202	.841	.744
7	Methanol	27233	20064	7169	23648	.857	.652
8	Formamide	26766	19603	7163	23184	.895	.750

Table 5

Photo-physical parameters of 6,7-Dihydroxy-4-(trifluoromethyl) coumarin(67DH4TFMC) in different solvents

S. No.	Solvent	ν_a [cm ⁻¹]	ν_f [cm ⁻¹]	$\nu_a - \nu_f$ [cm ⁻¹]	$1/2(\nu_a + \nu_f)$ [cm ⁻¹]	$F_1(\epsilon, n)$	$F_2(\epsilon, n)$
1	Toluene	28312	22197	6115	25254	.028	.349
2	n-Butyl Acetate	28003	21404	6599	24703	.413	.471

3	Ethyl Benzoate	27708	21344	6364	24526	.430	.550
4	Ethyl Propionate	27909	21263	6646	24586	.460	.489
5	Ethyl Acetate	28121	21177	6944	24649	.492	.499
6	Acetone	27909	20938	6971	24423	.792	.640
7	DMSO	26939	19466	7473	23202	.841	.744
8	DMF	26852	19535	7317	23193	.850	.650
9	Methanol	27233	20064	7169	23648	.857	.652
10	Acetonitrile	28208	20959	7249	24583	.861	.665
11	Formamide	26766	19603	7163	23184	.895	.750

Table 6
Photo-physical parameters of 7-Methoxy-4-(trifluoromethyl) coumarin(7M4TFMC) in different solvents

S. No.	Solvent	ν_a [cm ⁻¹]	ν_f [cm ⁻¹]	$\nu_a - \nu_f$ [cm ⁻¹]	$1/2(\nu_a + \nu_f)$ [cm ⁻¹]	$F_1(\epsilon, n)$	$F_2(\epsilon, n)$
1	n-Hexane	30590	25000	5590	27795	-.0015	.253
2	Cyclohexane	30422	24844	5578	27633	-.003	.287
3	Toluene	29967	24324	5643	27145	.028	.349
4	Ethyl Benzoate	29859	24096	5763	26977	.430	.550
5	Decanol	29967	24218	5749	27092	.553	.571
6	CH ₂ Cl ₂	29994	24295	5699	27144	.595	.584
7	Octanol	30048	24271	5777	27159	.614	.604
8	Heptanol	29913	24032	5881	26972	.652	.618
9	Hexanol	29931	24166	5765	27048	.686	.627
10	Butanol	29994	24137	5857	27065	.749	.648
11	Ethanol	30057	24137	5920	27097	.810	.650
12	Formamide	29726	23775	5951	26750	.895	.750

Table 7

S. No.	Solute molecule	m_1 [cm ⁻¹]	m_2 [cm ⁻¹]	Radius a [Å]	μ_g [D]	μ_e [D]	$\Delta\mu$ ($\mu_e - \mu_g$) [D]	μ_e/μ_g	Corrélation Coefficients
1.	7H4TFMC	1959.90	3812.31	4.50 ^a	1.99	6.20	4.21	3.11	0.95 ; 0.85
				3.26 ^b	1.22	3.82	2.60	3.13	
2.	67DH4TFMC	1411.92	4707.94	4.60 ^a	4.31	8.01	3.70	1.85	0.92 ; 0.88
				3.28 ^b	2.59	4.82	2.23	1.86	
3.	7M4TFMC	351.35	1610.72	4.59 ^a	3.23	5.07	1.84	1.56	0.91 ; 0.86
				3.79 ^b	2.47	3.84	1.37	1.55	

m_1 and m_2 are the slopes of $(v_a - v_f)$ vs. $F_1(\epsilon, n)$ and $\frac{1}{2}(v_a + v_f)$ vs. $F_2(\epsilon, n)$ respectively;

' a ' is the Onsager radius; μ_g, μ_e are the dipole moments in ground and excited state respectively

11. Infrastructure created from the project: NA

12. Project outcomes:

Solvent effects on electronic transitions in some coumarins

Mudassir M. Husain, Rajeev, H.C.Tandon, M.Kasim

Proceedings, Topical Conference on Interaction of EM Radiation with atoms, Molecules and clusters (TC-2010)

March 3-6, 2010, Raja Ramanna Centre for Advanced Technology, INDORE (TC-P88)

13. Benefit from the project to the society (max 100 words)

Mr Rajeev Completed his PHD

14. Any other information you may think is important in this regard: NO

Faculty of Engineering & Technology

Department of Civil Engineering

1. **Name of the Department:** Department of Civil Engineering
2. **Project Title:** DRS Phase-I level, Under the Special Assistance Programme (SAP) Seismic Assessment and Safety of Masonry Building.
3. **Coordinator:** Prof Khalid Moin
4. **Deputy Coordinator:** Dr. Rehan Ahmad Khan
5. **Funding Agency:** UGC
6. **Amount funded:** INR. 43,15,000
7. **Duration of the Project:** 5year
8. **Starting & Completion date of the Project:** 01/04/2009 to 31/03/2014
9. **Project objectives:-**
 - To develop mathematical model of the existing masonry building including soil-structure interaction and obtain its dynamic response under earthquake forces using proposed Oasys Webinar software.
 - To develop experimental model of the same masonry building including soil-structure interaction and obtain its dynamic response under earthquake forces using proposed shake table.
 - To study the seismic performance based design of existing masonry building with and without soil-structure interaction using Pushover analysis in SAP-2000.
 - To study the influenced of different types of Base Isolation on the performance of the exiting masonry building experimentally and analytically.
 - To compare the results obtained from the experimental model with the results obtained analytically for the above studies.
 - To recommend retrofitting measures if the stresses developed in the building elements under earthquake forces exceeds the allowable stresses.
10. **A brief overview:**

Amongst the natural hazards, earthquakes have the potential for causing the greatest damages. Since earthquake forces are random in nature & unpredictable, the engineering tools needs to be sharpened for analyzing structures under the action of these forces. Performance based design is gaining a new dimension in the seismic design philosophy wherein the near field ground motion (usually acceleration) is to be considered. Earthquake loads are to be carefully modeled so as to assess the real behaviour of structure undergoing damages in most regulated way. In this context pushover analysis which is an iterative procedure shall be looked upon as an alternative for the orthodox analysis procedures. This study focuses on pushover analysis of multistory RC framed buildings subjecting them to monotonically increasing lateral forces with an invariant height wise distribution until the preset performance level (target displacement) is reached. The promise of performance-based seismic engineering (PBSE) is to produce structures with

predictable seismic performance. To turn this promise into a reality, a comprehensive and well-coordinated effort by professionals from several disciplines is required.





11. Infrastructure created from the project:

Setting up of the Shake Table Facility

The SAP project team was able to set up a state of the art shake table facility (1.5m X 1.5m, unidirectional, sinusoidal loading). The technical details of the installed shake table facility is given in annexure I.2 The laboratory has attained greater significance due to the worldwide emphasis on abatement of seismic risk and associated research work. Excellent research work has been carried out in this laboratory.



12. Project outcomes:

a. Research in *Seismic Assessment and Safety of Structures*.

Two Ph D scholars are presently pursuing PhD in the thrust area of seismic assessment and safety of structures, Six International Journal Papers, three International conference papers have been published and many more papers are in the pipe line from the project (Annexure II).

b. Training programs:- Technical Assistant was trained by Milenium Technologies (I) Pvt. Ltd.

c. Workshops, Tutorials and lectures

Four national workshops on Seismic Assessment and Safety of Structures were organised from year 2009 to 2013. A number of technical lectures, mostly by nationally renowned experts in the thrust area, were conducted under the SAP project for the benefit of faculty members and students of the Department. The tutorial is an built-in part of the curricula.

d. Technical BooksList of Books Purchased under SAP project

S. No	Author	Title
1	D.K. Paul, M.L. Sharma	13th Earthquake Engineering (Vol. I & II)
2	D.K. Paul, Ashok Kumar, M.L. Sharma	12th Earthquake Engineering (Vol. I & II)
3	S. Basu, S.K. Thakkar, Pankaj Agarwal	Proceeding if the Workshop on Retrofitting of Structure
4	Dr. Jaikrishna , Dr. N.C. Nigam & Dr. N.C. Singh	Earthquake Disaster Preparedness
5	Late Prof. Jai Krishan	Proceeding of the Workshop on Recent Earthquake of Chamoli & Bhuj (Vol. I & II)
6	David J. Dowrick	Earthquake Resistance Design for Engineers & Architects
7	Alain Pecker	Advanced Earthquake Engineering Analysis
8	William H.K. Lee, Horoo Kamamori, Paul C. Jennings & Carl Kisslinger	International Handbook of Earthquake & Engineering Seismology (Part - A)
9	William H.K. Lee, Horoo Kamamori, Paul C. Jennings & Carl Kisslinger	International Handbook of Earthquake & Engineering Seismology (Part - B)
10	Devdas Menon	Advanced Earthquake Engineering Analysis
11	David J. Dowrick	Earthquake Resistance Design for Engineers & Architects
12	Donald Hyndman and David Hyndman	Natural Hazards & Disasters
13	T. Paulay, M.J.N. Priestley	Seismic Design of Reinforced Concrete & Masonry Buildings
14	Manish Shrikhande, Pankaj Agarwal	Earthquake Resistant Design of Masonry Buildings
15	George G. Penelis & andreas J. Kappos	Earthquake Resistance Concrete Structure
16	Adrian S. Searlat	Approximate Methods in Structural Seismic Design
17	Edmund Booth & David Key	Earthquake Design Practice For Buildings
18	P. Kumar Mehta , Paulo J.M. Monteiro	Concrete Technology 4th ed.
19	M L Gambhir	Concrete Technology
20	T.K. Datta	Seismic Analysis of Structure
21	NBC	National Building Code of India
22	BMTPC	Vulnerability Atlas of India
23	J . L. Meek	Matrix Structural Analysis
24	S K Duggal	Design of Steel Structures
25	D.K Paul & M.L. Sharma	13 SEE - 06 Earthquake Engineering (Volume-I)
26	D.K Paul & M.L. Sharma	13 SEE - 06 Earthquake Engineering (Volume-II)
27	Robert Park, Thomas Paulay	Reinforced Concrete Structure
28	P.C. Varghese	Design of Reinforced Concrete Foundations
29	M.L. Gambhire	Stability Analysis and Design of Structures

30	Bryan Stafford Smith, Alex Coull	Tall Building Structures
31	Theodore V. Galambos & Andrea E. Surovek	Structural Stability of Steel Concept and Applications for Structural Engineers
32	T.R. Jagadeesh & M.A. Jayaram	Design of Bridge Structures (Second Edition)
33	Dr. V.L. Shah & Late Dr. S.R. Karve	Limit State Theory and Design of Reinforced Concrete
34	J.N. Bandyopadhyay	Design of Concrete Structures
35	P.C. Varghese	Foundation Engineering
36	N.N. Som & S.C. Das	Theory and Practice of Foundation Design
37	Chennakesava R. Alavala	Finite Element Methods Basic Concepts and Applications
38	K.G. Bhatia & A.K. Singh	Proceeding of the Symposium on Earthquake Effects on Structures, Plant and Machinery (Vol-I)
39	Vasant Matsagar & Radhey Shyam Jangid	Earthquake Base-Isolated Buildings
40	Indian Society of Earthquake Technology (ISET)	A Manual of Earthquake Resistant Non-Engineered Construction
41	Indian Society of Earthquake Technology (ISET)	Proceeding of Workshop on Retrofitting of Structures
42	Indian Society of Earthquake Technology (ISET)	Earthquake Disaster Preparedness
43	Terry L. Krause, Roderick D. Reardon, Albert B. Pincine, Thomas W. Sigmund	Design of Municipal Wastewater Treatment Plant (Vol-1)
44	Terry L. Krause, Roderick D. Reardon, Albert B. Pincine, Thomas W. Sigmund	Design of Municipal Wastewater Treatment Plant (Vol-2)
45	Terry L. Krause, Roderick D. Reardon, Albert B. Pincine, Thomas W. Sigmund	Design of Municipal Wastewater Treatment Plant (Vol-3)
46	Gordon A. Fenton & D.V. Griffiths	Risk Assessment in Geotechnical Engineering
47	J.H. Bungery, S.G. Millard, M.G. Grantham	Testing of Concrete in Structures
48	Amr S. Elnashai, Luigi Di Sarno	Fundamental of Earthquake Engineering
49	Haym Benoroya	Spatial Variation of Seismic Ground Motion (Modelling & Engineering Applications)
50	Manolis Papadrakakis, Dimos C. Charmpis, Nikos D. Lagaros & Yianais Tsompanakis	Computational Structural Dynamics & Earthquake Engineering
51	Prab Bhatt, Thomas J. MacGinley & Ban Seng Choo	Reinforced Concrete Design Theory & Examples
52	Jacques Betbeder-Matibet	Seismic Engineering
53	Tapan K. Sen	Fundamentals of Seismic Loading on Structures

13. Benefits from the project to the society:-

The PG students performed the project work on the SHAKE TABLE. They surely will serve the society with application of the knowledge they acquired during they experimentation.

14. [Any other information you may think is important in this regards:-](#)

Base upon the performance of phase I, SAP the department has got the Phase II part of the project costing Rs.144.36 lakh.

Faculty of Engineering & Technology

Department of Civil Engineering

1. **Name of the Department:** Department of Civil Engineering
2. **Project Title:** Indra Gandhi Drinking Water Scheme: A study on its socio-economic and impact on Public Health in scheduled caste population of various village in Haryana
3. **PI:** Dr. Sirajuddin Ahmad



4. **Co-PI:** Nil
5. **Funding Agency:** Public Health Engineering Department
6. **Amount funded:** 2,93,250.
7. **Duration of the Project:** 1.5yr
8. **Starting & Completion date of the project:** 2010-12
9. **Project Objective:**
 - Evaluation of performance of pipeline from source/distribution system to the house of scheduled cast population
 - Evaluation of availability of water on these tanks
 - Evaluation of public appraisal and impact of the scheme on the upliftment of SC habitation
 - Evaluation of level of satisfaction

10. **A brief overview:**

The project was conducted to evaluate the performance of community water supply scheme and its impact on public health in scheduled cast population of various villages in Haryana under Indira Gandhi Drinking water Scheme. The study included socio-economic survey to evaluate the socio-economic condition and appraisal of existing water supply infrastructure of the selected blocks. Evaluation of the Indira Gandhi Drinking water Scheme on upliftment of the SC habitation was assessed through socio-economic and environmental engineering point of angle by measuring level of satisfaction.

11. **Infrastructure created from the project:**

- a) Consumables for laboratory.

12. **Project outcomes:**

- a) Assessment of the social infrastructure scheme on meeting its objective on ground.
- b) Hands on training for project personnel on socio-economic survey and issues of community water supply planning from environmental and urban planning point of view.

13. [Benefits from the project to the society:](#)

The outcome of the project will help in assessment of existing water supply and distribution system of the areas. The survey of socio-economy and water supply infrastructure will set the baseline for planners to decide priority areas of the water supply management and to manage the water supply scheme more judiciously in achieving its objective

Faculty of Engineering & Technology

Department of Civil Engineering

1. **Name of the Department:** Department of Civil Engineering
2. **Project Title:** Quality Assessment Study for the Raising and Strengthening of Right Embankment of River Yamuna From Nizamuddin railway Bridge & Nizamuddin Road Bridge
3. **PI:** Prof. Sirajuddin Ahmad



4. **Co-PI:** Dr. Ziauddin Ahmed
5. **Funding Agency:** Govt. of NCT of Delhi, office of Executive Engineering
6. **Amount funded:** 6,00,000
7. **Duration of the Project:** 2yr
8. **Starting & completion date of the Project:** 2010-13
9. **Project objectives:-**
 - To optimize the strength of embankment using local material and soil against seepage and protection from flood.
 - To monitor quality of workman ship and suggest measure for its improvement.

10. A brief overview:

For the protection of a portion of Ring Road and Millennium Depot located between I.P. Gas Turbine Power Station (0.0 m) and Nizamuddin Bridge (1500.0 m), against Yamuna the embankment was designed. The old embankment was already existed at most of the length of proposed embankment which was by increasing its height and width. Therefore it was a challenging work where the existing structure was augmented and strengthens using local soil and stone pitching.

The salient feature of the augmented embankment under study is as follows.

Top Width:	8.00 m (Carriageway 6.00 m with shoulder of 1 m width at each side)
Base width	Maximum: 27 m , Minimum 19 m
Height from existing GL	Maximum: 4.5 m , Minimum 1.0 m
Length	1500 m

Geo-fabric filter was used for the protection of apron against possible soil erosion during flood. 1.0m x1.0 m x 0.85 m size stone crate was used for stone pitching at

river side. Stone crates were laid on cushion of 15 cm thick sand layer. Turfing with slope of 1:2 was provided at city side with grass cover on the top.

11. [Infrastructure created from the project](#): Consumables for laboratories and office.

12. [Project outcomes](#):

- Development of purchase of consumables for experimental studies in the laboratory
- Hands on training for students on design of quality monitoring of flood embankment
- B. Tech Projects were performed on the same topic.

13. [Benefits from the project to the society](#):

The project was based on using exiting old structure for the development of flood protection (embankment) for major road and important public place such as Millennium Bus Depot and main road (Ring Road). By using existing structure and regular quality monitoring substantial cost was reduced.

As an intangible benefit, river front area was developed which can be effectively used as picnic and recreational spot.

Faculty of Engineering & Technology

Department of Civil Engineering

1. **Name of the Department:** Department of Civil Engineering
2. **Project Title:** Project based on Ranney Wells, Deep Tube wells in village Rahimpur & Distribution network for covering **148** Nos. villages of Mewat under Rajiv Gandhi Drinking water Supply Augmentation project Leg for Mewat
3. **PI:** Prof Sirajuddin Ahmed



4. **Co-PI:** Dr Arvinder Ansari
5. **Funding Agency:** Haryana
6. **Amount funded:** INR. 3,27,750
7. **Duration of the project:-**1.year
8. **Starting & completion date of the project:** October, 2009 to August 2010
9. **Project objectives:-**
 - Evaluation of performance of Deep Tube Wells drilled near river Yamuna at village Rahimpur.
 - Evaluation of existing Water supply scheme consisting of Ranney Wells, deep tube wells, rising mains, main boosting station, intermediate boosting stations, subsidiary boosting stations and internal distribution network.
 - Distribution of water in villages
 - Public appraisal and upliftment noticed
10. **A brief overview :**

The project was conducted to evaluate the performance of water supply distribution network under Rajiv Gandhi Drinking Water Supply Augmentation Project Leg II for Mewat, Haryana. The study included appraisal of performance of water supply scheme on Ranney Wells and Deep Tube wells and performance evaluation of water main distribution network covering 148 nos. of villages in Mewat Region in Haryana.
11. **Infrastructure created from the project:**
 - a) Consumables for laboratory.
12. **Project outcomes:**
 - a) Assessment of the social infrastructure scheme on meeting its objective on ground.

- b) Hands on training for project personnel on socio-economic survey and issues of community water supply planning based on Ranney Wells and Tube Wells from environmental and urban planning point of view.
- c) The outcome of study was reported by TRIBUNE NEWSPAPER (Chandigarh) on 5th April 2011

13. [Benefits from the project to the society:](#)

The outcome of the project will help in assessment of existing water supply and distribution system of the areas. The reconnaissance of water supply infrastructure will set the baseline for planners to decide priority areas of the water supply management and to manage the water supply scheme more judiciously in achieving its objective.

Faculty of Engineering & Technology

Department of Civil Engineering

1. **Name of the Department:** Department of Civil Engineering
2. **Project Title:** Study of wastewater and solid waste management for five star hotels of Delhi
3. **PI:** Prof. Sirajuddin Ahmad
4. **Co-PI:** Nil



5. **Funding Agency:** Delhi Pollution Control Committee, Govt. of NCT of Delhi.
6. **Amount funded:** Rs. 9,70,000.
7. **Duration of the project:** 2 Year
8. **Starting & completion date of the project:** March 2009 to April 2011
9. **Project objectives:-**
 - Evaluation of water consumption pattern in different Five Star Hotels of Delhi.
 - Assessment and characterization of wastewater generated by hotel industry.
 - Study of solid waste generation pattern
 - Assessment and characterization of solid waste generated by hotel industry.
 - Feasibility assessment of water conservation practices by hotel industry
 - Feasibility assessment of making five star hotel 'zero Discharge site,
 - Feasibility study of onsite composting, and sale of non-perishable solid waste from hotel industry.
10. **A brief overview:**

The study was undertaken to evaluate the water resource conservation pattern and waste generation pattern from different five star hotel of Delhi. Based on the findings of resource consumption patterns environmental performance index of five star hotels was evaluated. Practiced Environmental management system was compared with the best-available technologies/systems and thereby guidelines were formulated to reduce the carbon foot print of the hotel industry and making hotel industry more 'green'. The study included detailed survey of five star hotels in respect to their size, occupancy and water conservation patterns. Through assessment of water consumption pattern by different section of the hotel 'environmental benchmark' was established for the hotel industry. The waste water generated from the hotel industry was analysed qualitatively as well as quantitatively. Feasibility of onsite treatment technologies and thereby recycling option of treated wastewater was evaluated. Solid wastes generated were also

characterized and thereby options of implementing integrated solid waste management practices for five star hotels were evaluated.

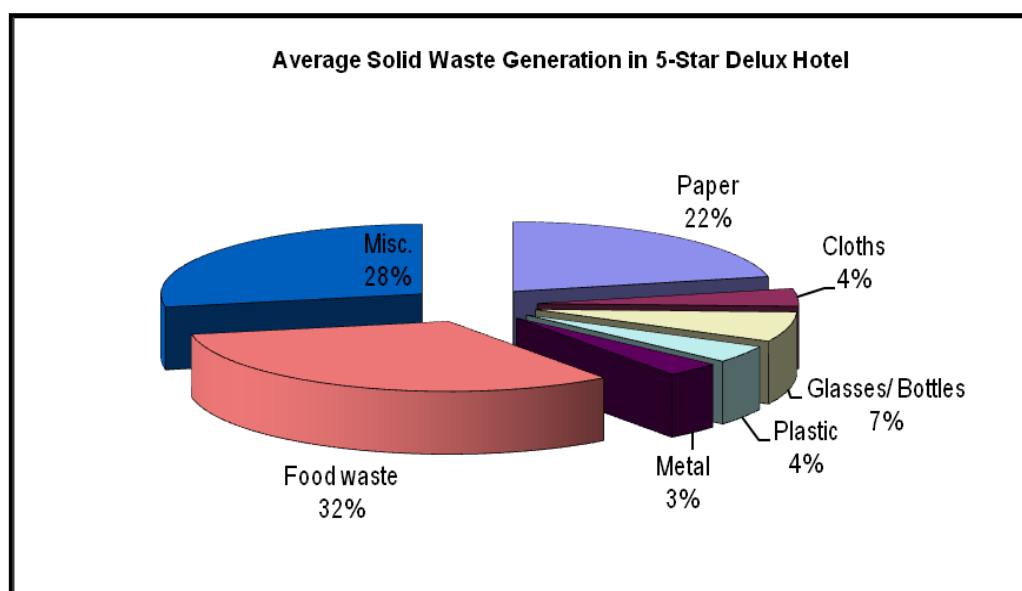
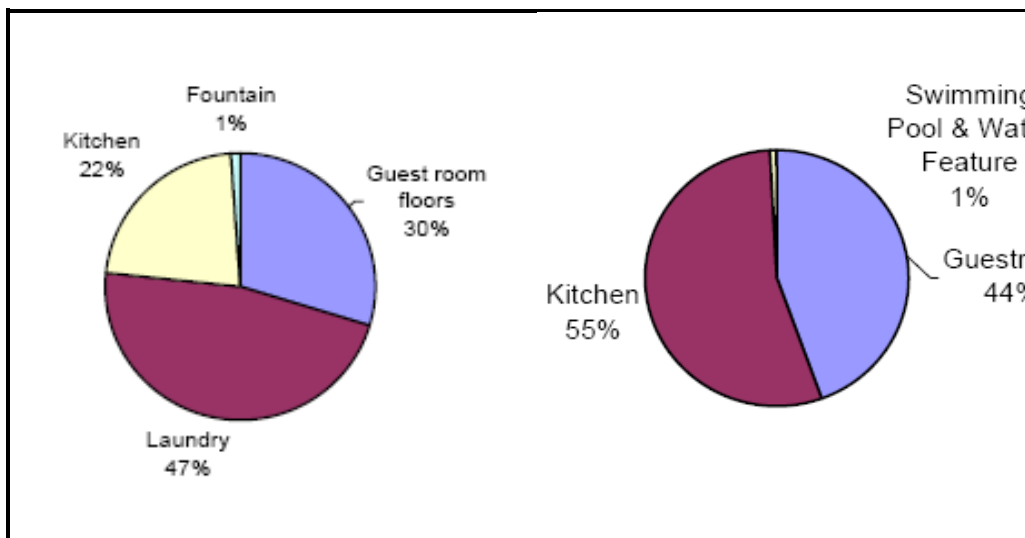


Fig. : Graphical representation of average composition of Solid Waste Generation (%)

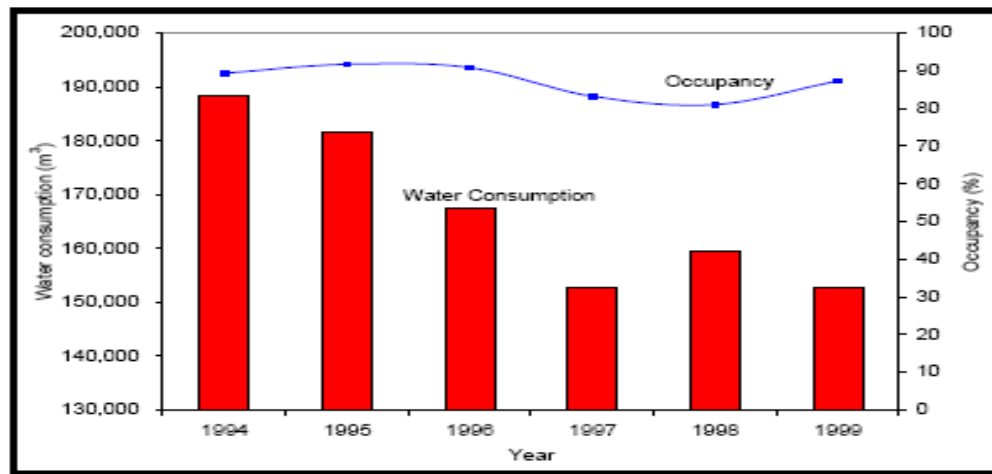


Fig.: Water consumption pattern after implementation of water conservation programme

11. Infrastructure created from the project:

- a) pH Meter
- b) Nephelometer.
- c) Glass wares
- d) Chemicals

12. Project outcomes:

- a) Assessment of water resource consumption pattern by five star hotel industries and their societal impact.
- b) Technical feasibility assessment of onsite waste water treatment technologies, Feasibility assessment of water recycling options and reducing water consumption patterns.
- c) Characterization of solid waste generated by hotel industry. Assessment of solid waste generation pattern by five star hotel industries and their societal impact.
- d) Feasibility assessment of waste minimizing options. Technical feasibility assessment of onsite waste treatment technologies.
- e) Development of guideline for minimizing resource consumption pattern by hotel industry.
- f) Development of guideline for improvement of environmental performance index of hotel industry.
- g) Development of guideline for benchmarking hotel industry on the basis of its environmental performance index.
- h) Findings of the study was reported in Hindustan Times.
- i) Recommendations of the study has been accepted and implemented by the Govt. of NCT of Delhi

13. [Benefits from the project to the society:](#)

The outcome of the project will help in reducing carbon foot print of the hotel industry. Reduced resource consumption and reduced waste generation will not only save the revenue for the hotel industry but the available resources will also help in better infrastructure planning and will overall increase the environmental sustainability. Developed guidelines will help in monitoring and periodic review of the environmental performances of the hotel industry which will set the baseline for further standardizing environmental performance index of hotel industry.

Faculty of Architecture and Ekistics

Department of Architecture

1. **Name of the Faculty/Department:** Faculty of Architecture And Ekistics, Architecture, JMI
2. **Project Title:** Dayal Bagh, A Sustainable model of Community living.
3. **Prof. Investigator:** Prof S.M Akhtar.



4. **Co-Investigator:** Assistant Prof Niti Gupta, Dayalbagh Educational Institute.
5. **Funding Agency:** HUDCO
6. **Amount Funded:** INR 2,00,000.
7. **Duration of the Project:** 15 months
8. **Starting date of the Project:** March, 2012
9. **Project objectives:**

Dayalbagh as the name suggests is laid in a garden setting planning, where the farms, fields and gardens are given importance. They cover almost half of the Dayalbagh, surrounding all the residential blocks and educational blocks, so as to provide a serene and beautiful environment.
10. **A brief overview of the Project:**

The socio-religious revolution or renaissance which took place in India in the nineteenth century is generally known for its three facets: the change in Indian thought current under the hypnotic impact of the West; a positive leaning towards puritanic revivalism as a reaction to the influx of western ideas; and a deliberate attempt at synthesis of the Oriental and the Occidental. But besides these currents, there was one more - a spontaneous outburst of an inner urge of the Spirit, which was far away from any external influence whatsoever. The father of this spiritual renaissance was Soamiji Maharaj, the founder of the Radhasoami.Faith, who started his teachings as early as the twenties of the nineteenth century. Whatever he said or wrote was the outcome of his intuitive realization and mystic revelations. Soamiji Maharaj founded this esoteric faith in 1861. The chief characteristics of this faith are love and devotion. It revitalized the medieval Bhakti trends and revived the ancient Guru traditions. The faith presents a new concept of the Supreme Being, a novel revelation of the name "Radhasoami" and introduces a well-defined and developed method of internal practice -- surat-shabd-yoga -- to the seekers after Truth. Not only an ascetic but also a man living in family can practise this Yoga. The faith has many other spiritual observances and a well spelt code of moral conduct to be followed by devotees. The faith owes its systematization to the

second guru, Rai Saligram Bahadur (Hazur Maharaj), who was its real architect. The Radhasoami Faith has made a remarkable contribution in the socio-religion field as well. The founder gurus of the faith made direct hit upon the prevalent malpractices and anomalies in the indigenous socio-religious beliefs. They advocated for steady and gradual reforms in Indian society and simplified religion so as to make it accessible to all who desire salvation from worldly bondage, without any distinction of caste, colour and nationality.

11. [Infrastructure created from the product](#): N/A.

12. [Project outcomes](#):

- a) Dayalbagh as the name suggests is laid in a garden setting planning, where the farms, fields and gardens are given importance. They cover almost half of the Dayalbagh, surrounding all the residential blocks and educational blocks, so as to provide a serene and beautiful environment.
- b) The planning of Dayalbagh is in a linear fashion where the growth of Dayalbagh takes place along the main road connecting the entire Dayalbagh towards the bank of river Yamuna.
- c) The educational block is placed on the extreme left to segregate the educational block from residential and industries. The educational block was planned in the end and may not have been a part of Dayalbagh master plan first made also could have made to decide the placement of the educational block.
- d) The other establishments, industries, offices are placed almost in the centre and next to the road to provide better accessibility. They are encircled by all the residential colonies on all sides, thereby revealing the importance of their placement.
- e) The Satsang hall, which is supposed to be the main attraction and lively place of Dayalbagh is placed right in the centre, encircled by all the other activities.
- f) Yamuna river bank is in the extreme left, and on the right is the city therefore, the extension of the residential blocks and reclaiming of land is being done on the left end of Dayalbagh.

13. [Benefits from the project to the society](#):

- a) Prem Vidyalaya, the girls secondary high school, is also placed in the heart of the of Dayalbagh, whereas the boys intermediate college is on the extreme end, this is possibly done to create a protective feeling and secure environment for the girls which helps in promoting education.
- b) Primary classes earlier were held in Prem Vidyalaya when it was founded in 1930 but later separate and individual primary schools were made just near the residential blocks.

14. [Any other information you may think is important in this regard](#): N/A

India Arab Cultural Centre

1. **Name of the Centre:** India Arab Cultural Centre.
2. **Project Title:** Documentation of Arabic- Malayalam Language and Cultural-Linguistic Traditions of Mappila Muslims of Kerala.
3. **Project Investigator:** Dr.M.H.Ilias.
4. **Funding Agency:** Indira Gandhi National Centre for the Arts (IGNCA).
6. **Amount funded:** INR 18, 75, 000.00
7. **Duration of the project:** 1 year and 10 months
8. **Starting date of the Project:** February 17, 2012-December 31, 2013.
9. **Project objectives:**

To make a detailed socio-linguistic study on the origin, evolution and spread of Arabic-Malayalam language.

 - a) To acquire a basic understanding of the historical, social as well as cultural context in which Arabic Malayalam gained wider popularity and reach among the Mappila Muslims of Kerala.
 - b) To make an enquiry into the cross-cultural and linguistic influence on Arabic-Malayalam and trace out the cross-philological base of some of the widely used terms in this language.
 - c) To document art forms and cultural performances in which the oral literary tradition finds its expression.
 - d) To study how Arabic-Malayalam constituted a parallel way to understand the reality and knowledge production among Mappilas.
 - e) To make a research leading to develop a comprehensive classification method for the literary texts and oral compositions considering their structure, language register and literary and stylistic features.
 - f) To analyze the translations of basic Islamic texts in Arabic to this language with the purpose of understanding the extent of freedom that the translators enjoyed, while interpreting the texts.
10. **A brief overview of the project:**

The scope of the proposed work was to create audio, video, graphic and text documentation material covering use of Arabic-Malayalam language in a variety of social and cultural contexts. There are a number of life-cycle events among Mappila Muslims; among them most prominent are *Oppana, Vaapattu, kolkali, nercca, kaimuttukali, paricamuttuukali etc.* This work documented such art forms and cultural performances in which the oral literary tradition of Arabic-Malayalam finds its expression. The scope of this work also included the documentation of *Mappilappattu* which makes up the large chunk of literary corpus. The documentation involved transcription, translation and transliteration of *mappilappattu, padappattu, kissapattu, kalyanapaatu or wedding songs, madhu pattukal, Vattappattu* being disseminated in written and oral forms.
11. **Infrastructure created from the project:** N/A
12. **Project outcomes:**
 - a) Documentaries & A.V. Materials: 5nos.
 - i. Arabic-Malayalam Language.
 - ii. Kathupattu.

iii. Kessu Pattu.

iv. Mala Pattu.

v. Vattapattu.

b) Monograph entitled *Arabic-Malayalam: Cultural-Linguistic Traditions of Mappila Muslims of Kerala* (to be published by IGNCA).

13. [Benefit from the project to the society:](#)

There is of course relevance in an in-depth study of indigenous Muslim communities, cultural as well as linguistic specificities they possess and immunities they have acquired in a more globalized world. This work has a greater significance in the context of a clash that characterizes the cultural life of Muslims of Kerala; between the traditions of pan-Islamism and local tradition.

Moreover, the literature on Arabic-Malayalam remains very scanty. The existing works, generally, fail to measure the extent of dynamism and creative interplay of various cross-cultural elements in the formation of this language. Similarly, there are not many studies that adequately dealt with this language from socio-linguistic and ethnographic point of view.

14. [Any other information you may think is important in this regard:](#)

The documentaries are to be telecast on *Doordarshan*

India Arab Cultural Centre

1. **Name of the Department:** India Arab Cultural Centre
2. **Project Title:** Investment in the Northern Indian Ocean Rim Countries: Implications for India's Energy Security
3. **PI:** Dr. Sameena Hameed
4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR
6. **Amount funded:** INR. 4,96,650
7. **Duration of the Project:** 2 year
8. **Starting and Completion date of project:** 2012-2014
9. **Project objective:**

To examine India's investment opportunities in the Northern Indian Ocean Rim countries (the countries in the Gulf, South Asia and Myanmar) to broaden and deepen mutually beneficial stakes for sustainable and stronger energy ties. The study shall meet the following objectives:

To examine the energy resources of the region in the Northern Indian Ocean Rim Countries

To examine the trade and investment patterns in energy sector and to examine the challenges faced by the energy sector in the region in terms of capital requirement, technical capabilities and constraints along the supply chain

To examine the benefits of regional energy trade in rationalising cost as well as exploit the proximity of coal, gas and hydro energy resources in optimising supply pattern.

To examine India's investment in the energy sector and related sector and the extent to which investment and trade flows leverage one another;

To examine trade and investment policies of the countries in the region as well as bilateral and regional trade agreements to determine market access and the extent to which investments protection and facilitation measures can promote diversification and intra-regional trade.

To identify how India can through mutually beneficial integrated investment and trade ensure mutual energy security and clean energy partnership
10. **Brief overview of the Project:**

Investment in the Northern Indian Ocean Rim Countries: Implications for India's Energy Security Introduction

India has emerged as an economic power in the Northern India Ocean Rim region. It can play a decisive role in this region as most of the countries viz the Gulf, South Asia, Myanmar look for investment for economic diversification. At the same time India can use these economic ties for boosting its trade in general and energy security in particular. Geographical proximity of energy sources and integrated

mutual commercial stakes with energy exporters and transit countries are the anchors of India's energy security. Energy security is important for India as well as for the regional energy exporters like Myanmar, Bangladesh and the Gulf. Energy exporters have their own energy crises like power shortages, declining production capacity and maturing oil fields, which cuts into their exportable surplus. There is a need to examine the potential of India's expertise in enhanced oil recovery technology, oil and gas exploration in difficult terrains, sophisticated refineries, non-conventional and cheaper desulphurisation process, and bioremediation of oil sludge to secure an integrated downstream and upstream investment package in the region. Integrated power grids and trans-national pipelines materialise on the existing patterns of intra-regional trade. India's trade with its South Asian neighbours is very low due to competitive exports. Its bilateral trade with the Gulf countries has only exploited about 50-60 percent of its trade complementarities. India's economic engagement with Myanmar is crucial for the development of its North East region but is still insignificant. India is a diversified economy and can play a crucial role in the promoting diversification and regional economic integration like that played by Japan in East Asia through 'flying geese pattern' of trade and investment in the Gulf, South Asia and Myanmar. In the era of competitive globalizations, innovative trade and business strategies are required to lock in consumers. There is need to examine various models of economic engagement like investment facilitating counter trade through buy backs arrangements , counter export obligations and value neutral trade transactions (swap trade/ switch export obligations) in fostering regional trade. Investment facilitation and liberalisation agreement in India's FTA's would enable it to internalize the comparative advantages of the different countries into its regional production network. There is a need to examine the different FTAs in force or under negotiation for their consistency in promoting intra-regional trade and investment. Payment problem would hamper bilateral trade and investment especially in case of Myanmar. There is a need to examine the ways in which India can increase the role of the Indian rupee to catch up with the growing influence of the Chinese Renminbi in the region.

11. [Infrastructure created from the project](#): --

12. [Project outcomes](#): Scope of the Study

The study will produce important insights for the policy making to engage the energy exporting and transit countries in a mutually beneficial way. The study would identify the challenges faced by their economies in general and energy sector in particular and the Indian expertise in redressing those challenges. The study would also explore the potential of energy swap trade that could rationalise transport cost as well as overcome the limitations imposed by the lack of pipelines. The study will bring out the benefits of multilateral electricity trade in rationalising cost and optimise the difference in supply patterns. This will help the policy makers to engage

the neighbouring countries in the region. The study will make policy implications with regard to streamlining investment in the region to be able to internalise their comparative advantage and overcome the limitations imposed by large negative lists in the Free Trade agreements in force or being negotiated with the various countries.

13. [Benefits from the project to the society:](#)

A diversified economy can play a crucial role in the promoting diversification and regional economic integration through 'flying geese pattern of industrialisation' like that played by Japan in East Asia. In this, the leading goose first investment in import dependent labour and skill intensive and low technology areas in the neighbouring countries (following geese) and later in technology intensive sectors. The following geese upon developing export capabilities makes similar investment to the next following geese in the region. It facilitates the emergence of regional production network hence regional integration. In the era of competitive globalizations, innovative trade and business strategies are required to lock in consumers. Various models of economic engagement like counter trade through buy backs arrangements; counter export obligations and value neutral trade transactions (swap trade/ switch export obligations) have fostered regional trade. Investment facilitation and liberalisation in Free Trade Agreement facilitates internalization of the comparative advantages of the different countries into its regional production network.

Centre for Management Studies

1. **Name of the Centre:** Centre for Management Studies, Jamia Millia Islamia.
2. **Project Title:** A study of the need and effectiveness of the training programmes conducted by the academic staff colleges for university teachers in the states of Delhi, Haryana, Punjab, U.P., and H.P.
3. **Project Investigator:** Dr. Rahela Farooqi, Associate Professor, Centre for Management Studies, JMI
4. **Co-Investigator:** Ms. Suman Dhawan, Lecturer, Meerabai Poletechnic, Maharani Bagh
5. **Funding Agency:** UGC
6. **Amount funded:** INR 7, 87,400.00
7. **Duration of the project:** Two years and later extended to July 31, 2013.
8. **Starting date of the Project:** February 1, 2011 to July, 31, 2013.
9. **Project Objectives:** The present study is guided by the following objectives:
 - a) To assess the training and development needs among the higher education faculty members in the five states mentioned.
 - b) To study the requirement of such development programmes towards uplifting the level of higher education.
 - c) To study the suitability of such programmes in the changing scenario.
 - d) To evaluate the effectiveness of professional development programmes being run in the capital city of Delhi and its surrounding states, namely, UP, Haryana, Punjab and HP.
 - e) To make recommendations for improvement in the existing system.

10. **A brief overview of the project:**

The present study is a humble effort to understand some significant concepts of Human Resource Management. The term 'Faculty Development' is used for professional development of key human resources of the higher education system, i.e., the teachers. In the fast changing world of education, developmental needs of faculty are also changing rapidly. The present research has focused on two main areas of the development programmes – need and impact. The faculty development programmes for the higher education faculty members are conducted by the Academic Staff Colleges, mainly in the form of orientation and refresher programmes.

A quantitative surveys was undertaken through structured questionnaire based on – (i) Need Assessment for FDPs and (ii) Impact of the FDPs. Key findings of the study were that majority of the participants attend the programmes to fulfil promotion requirements, followed by individual growth and improving the research skills. They believe that refresher courses are more needed than the orientation courses. Orientation courses are needed just after joining as permanent teacher and refresher courses should be held at regular intervals. The research also explored the cause and effect relationship towards relevance of FDPs in terms of present job requirements, quality assurance in higher education and attainment of goal of national development. The Researchers also tried to find out the effectiveness of FDPs in various dimensions. It has been explored that the FDPs conducted in 14 Academic staff colleges are highly effective in the areas leading to individual growth of the participants, knowledge about national development, and professional knowledge. However, the courses are effective

in the areas of teaching skill development, managerial skills development and research methodology. Majority of the participants believed that attending FDPs was a value addition and a worthwhile experience for them.

11. **Infrastructure created from the project:** Procured around 70-80 books in management, and journals, one PC and one printer.

12. **Project outcomes:**

a) Paper titled, *“Professional Development needs among Higher Education practitioners in India,”* presented at International Conference of Arts , Social Science and Technology at Penang, Malaysia, organized by University of Technology, Kedah published in e-proceedings, ISBN 978-963-44499-1-9.

b) Paper titled, *“ Application of Knowledge Management in Academic Staff Colleges”* presented in National Seminar on Knowledge Management and HRM published in edited book titled *“Knowledge Management & HRM: Issues & Challenges,* ISBN No. 978-93-80570-50-1 published by Global Books Organisation, New Delhi.

13. **Benefit from the project to the society:**

The present study could serve as a model for designing faculty development programmes in future. It could also be used as a policy document by authorities for the purpose of knowledge management in the higher education system of India. At present faculty development programmes are a part of education system as a routine, which can be easily converted as an effective platform for upliftment and development of higher education system of India. Besides helping in further development of the training system, it has helped in evaluating the existing system.

Centre for Management Studies

1. **Name of the Centre:** Centre for Management Studies.
2. **Project Title:** Examining association between S&P CNX Nifty and selected Asian and U.S stock market.
3. **PI:** Dr.Saif Siddiqui



4. **Co-PI:** Nil
5. **Funding Agency:** National Stock Exchange of India
6. **Amount funding:** INR. 50,000
7. **Duration of the Project:** 1 year
8. **Starting date of the Project:** 2009
9. **Project objectives:**

In a dynamic economic environment, knowledge of the international stock market structure is important for both investors and portfolio managers. Various theories in finance, suggest that individual and institutional investors should hold a well-diversified portfolio to reduce risk. From the perspective of an international investor who is willing to make portfolio investments in different stock markets, it is important to know if diversification can give some gain or not. International diversification is sought due to differences in the levels of economic growth and timing of business cycles among various countries. But, if the stock markets of different countries move together, then investing in different national stock markets would not generate any longterm gain to portfolio diversification.

10. **A brief overview:**

Previously, International Portfolio Diversification was recommended on the assumption of low correlations/ integration among different national stock markets. But due to growing international trade, investment flows, deregulation of the financial systems and growth in international capital flows, national economies have become more closely linked. It has created a level of correlation among markets.

11. **Infrastructure created from the project:**

12. **Project outcomes:**

A comprehensive study on stock market integration carries a lot of importance in the present day situation when Asian economies are among fastest growing economies in the world. Policymakers need to understand the emerging stock market interdependence. Such an understanding will provide a better grasp of the functioning of the Asian stock markets, and allow investors and policy makers to ask

various questions regarding the actual trend (i.e., constant, increasing, or decreasing) of interdependence among them

13. [Benefits from the project to the society:](#)

Present research considers a key issue that may interest investors, portfolio managers, corporate executives and policy makers. They are interested in understanding the intensity of stock market integration for diversification motives. Thus, it becomes essential to examine the interdependence between different Asian markets, including S&P CNX Nifty and its relation with other markets

14. [Any other information you may think is important in this regard:](#)

Centre for Management Studies

1. **Name of the Centre:** Centre for Management Studies
2. **Project Title:** Knowledge Management & Organisational Culture: A Study of Media Industry in India
3. **PI:** Dr. Amirul Hasan Ansari
4. **Co-PI:** Nil
5. **Funding Agency:** UGC
6. **Amount funded:** INR: 5, 90,000/-
7. **Duration of the project:** 2 yrs. 6 months
8. **Starting date of the Project:** 1 July 2012
9. **Project objectives:**

The main objectives of the proposed study are to explore, understand and compare relationship among various dimensions of knowledge management and dimensions organizational culture at different managerial levels in selected print and electronic media industry in India.

10. **A brief overview of the project:**

Knowledge Management has come up as one of the important areas of management practices and established as a basic source for firms and economies to survive, compete and grow.

Knowledge Management has been evolved as a multidimensional construct with a large number of interrelated attributes. However, its three components or attributes that are commonly found in the literature are: knowledge acquisition or adaptation, knowledge dissemination or sharing and responsiveness to knowledge or knowledge use. Knowledge management practices in the organizations depend on some prerequisites. One of the important pre-condition for effective knowledge management is organizational culture.

As knowledge has been identified as one of the most important resources that contribute to competitive advantage of an organization, many organizations have reached the conclusion that effective knowledge management is the only way to lever their core competencies and achieve competitive sustainability (Saeed, 2010).

During the last almost two decades, the dramatic evolution in media industry, has changed the dynamics of knowledge market; consequently, creating a competitive environment among organizations (media industry) to consolidate and reconcile their knowledge assets.

Knowledge management is a rather a new phenomenon and is in the initial stages of its exploration. In order to develop new knowledge and use the knowledge which already exists within organizations, it seems essential to create an atmosphere of trust and security to encourage innovation, experimentation and risk taking (Lopez et al., 2004).

It has been explored and found that there is lack of empirical evidence about what are the specific cultural variables that knowledge management processes and help in development of knowledge culture in media industry. Consequently, as the media is knowledge driven industry, it necessitates the understanding the success and failure of knowledge management within the organizations by identifying and assessing the preconditions that are necessary to flourish the efforts.

It is found that there is lack of study on the variables – knowledge management and organizational culture in media industry in a collectivist culture like India, hence, the current study intended to examine the effects organizational cultural attributes with regard to dimensions of knowledge management. Moreover, the present work intended to explore the roles of managerial hierarchical levels with reference to knowledge management practices in media industry of India.

11. **Infrastructure created from the project:**

A printer and books.

12. **Project outcomes:**

A book will be published.

13. **Benefit from the project to the society:**

The findings can be utilized as means of developing and retaining high quality talent. The study would be of national importance as the findings would help in designing and developing policies for the benefit of the industry.

Nelson Mandela Centre for Peace and Conflict Resolution

1. **Name of the Centre:** Nelson Mandela Centre for Peace & Conflict Resolution
2. **Project Title:** Peacemaking & Peace-Building in Europe and South Asia (Human Resources & Curriculum Development)
3. **PI:** Prof. Tasneem Meenai & (Prof Radha Kumar, left the University in 2010)



4. **Co-PI:** Nil
5. **Funding Agency:** European Union
6. **Amount funded:** Euro 4,82,445
7. **Duration of the Project:** 3yr
8. **Starting & completion date of Project:** 01/03/2008 to 28/02/2011
9. **Project objective:**

The aim of the project “Peacemaking and Peace-Building in Europe and South Asia (Human Resource and Curriculum Development)” was to develop curricula and human resources for teaching European and South Asian peacemaking at universities in the two regions.

The Nelson Mandela Centre for Peace and Conflict Resolution is the first fully fledged Teaching and Research centre of its kind in India. As pioneers in this area, developing course and curriculum on peace and conflict studies has been our priority. This project proved a timely asset and several course modules developed in the project have been introduced for teaching to our students.

10. **A brief overview:**

The project was conducted with the following three Project Partners:

 1. Dr. John Doyle
Centre for International Studies
Dublin City University, Dublin, Ireland
 2. Prof. Amine Ait-Chaalal
Centre for the Study of International Conflicts (CECRI)
Catholic University of Louvain, (UCL) Belgium
 3. Prof. Rasul Bakhsh Rais
Department of Social Sciences, Lahore University of Management Sciences, Lahore, Pakistan
11. **Infrastructure created from the project:** Laptop and coloured printer.
12. **Project outcomes:**

SIX CURRICULUM DEVELOPMENT WORKSHOPS:

S.NO.	NAME OF THE WORKSHOP	ORGANIZED AT	DATE
1	I Curriculum Development Workshop	Jamia Millia Islamia	September 30 - October 2, 2008
2	II Curriculum Development Workshop	Dublin City University, Dublin	February 26-28, 2009
3	III Curriculum Development Workshop	Jamia Millia Islamia,	January 24-25, 2010
4	IV Curriculum Development Workshop (The Brussels workshop focused on the second (case-studies) part of the European module)	CECRI, UCL, Louvain	February 25-26, 2010
5	V Curriculum Development Workshop on "Peace keeping and Conflict Resolution in Europe and South Asia	Dublin City University	January 18-21, 2011
6	VI Curriculum Development Workshop on "Peacemaking and Peace Building in Europe and South Asia - An Assessment of the Curriculum and Its Implementation"	Jamia Millia Islamia	February 19-21, 2011

FACULTY EXCHANGES

S.No.	Name of the Faculty	Affiliation	University Visited	Date
1	Dr. Kaushikee	Project Manager and Faculty, JMI	Dublin City University, Dublin	Nov. 19-29, 2008
2	Dr. Furrukh Khan	Faculty, Lahore University of Management Sciences (LUMS), Lahore	Dublin City University, Dublin	Nov. 19-29, 2008
3	Dr. Donnacha Obeachain	Faculty, DCU	Jamia Millia Islamia	Jan. 16-24, 2009
4	Dr. John Doyle	Project Partner and Faculty, DCU	Lahore University of Management Sciences	Jan. 23-30, 2009

5	Prof. Radha Kumar	Project Director and Faculty, JMI	Lahore University of Management Sciences	Feb 14-21, 2009
6	Mr. Rashed Rehman	Faculty, Lahore University of Management Sciences (LUMS)	Jamia Millia Islamia	Feb.12-19, 2009
7	Amb. Shahryar Khan	Faculty, Lahore University of Management Sciences (LUMS)	Dublin City University	Mar. 14-20, 2009
8	Dr. John Doyle	Faculty, DCU	Jamia Millia Islamia	Nov. 21-28, 2009
9	Prof. Amine Ait-Chaalal	Project Partner and Faculty, Catholic University of Louvain (UCL), Belgium	Jamia Millia Islamia	Jan. 27-30, 2010
10	Dr. Kenneth McDonagh	Faculty, DCU	Jamia Millia Islamia	Jan. 27-30, 2010
11	Dr. Michel Liegeois	Faculty, UCL	Jamia Millia Islamia	Feb. 14-18, 2010
12	Dr. Tasneem Meenai	Faculty, JMI	Dublin City University	Feb. 22-27, 2010
13	Prof. Sujit Dutta	Faculty, JMI	Catholic University of Louvain, Belgium	Feb. 22-24, 2010

COURSE MODULES PRODUCED:

S.No.	Title of the Paper	Name of the Author
1	Modern South Asia – II: Population Movements, Borders, Migrants and Refugees	Dr. Kaushikee
2	Philosophies of Peace: Tagore and Vivekananda	Dr. Gangeya Mukherji
3	Resource Issues – Water (Pakistan, India, Bangladesh, Nepal, China)	B.G. Verghese
4	Nuclear Weapons and Arms Control	Dr. Zafar Nawaz Jaspal

5	SAARC	Prof. Tasneem Meenai
6	Democratizing Monarchy in Bhutan	Dr. Mathew Joseph C.
7	Pakistan	Prof. Kalim Bahadur
8	Jammu and Kashmir – I & II	Dr. Radha Kumar
9	Afghanistan – II	Dr. Zafar Nawaz Jaspal
10	Sri Lanka – I & II	Prof. Sumanasiri Liyanage
11	Nepal	Prof. S.D. Muni
12	Bangladesh	Prof. Dalem C. Barman & Dr. Smruti S. Pattanaik
13	North Eastern States of India	Prof. Bhupen Sarmah
14	Europe as a Zone for Peace – An Historical Introduction	Dr. Ecaterina McDonagh
15	European Integration: Theory and History	Dr. Apostolos Agnanopoulos
16	The Development and Different Roles of European Security Institutions, 1945 – 2010	Dr. Karen Devine, Dr. John Doyle and Dr. Eileen Connolly
17	EU Enlargement – Extending the ‘Zone of Peace’	Dr. Ecaterina McDonagh
18	EU and South Asia	Dr. John Doyle, Dr. Michael Breen and Dr. Ken McDonagh
19	European Peace Building: Past, Present and Future	Prof. Erwan Lannon
20	EU Foreign Affairs and Security Strategy: Values and Power	Prof. Sven Biscop
21	European Peace Strategies: Peace Making in the Middle East	Prof. Amine Ait-Chaalal
22	European Peace-building in Africa	Prof. Michel Liegeois
23	Russia and European Security	Dr. Donnacha O’Beachain

24	EU and Turkey	Dr. Apostolos Agnantopoulos
25	The Northern Ireland Conflict and Peace Process	Dr. John Doyle

13. [Benefit from the project to the society:](#)

The project benefitted over 500 students and faculty members of the Peace Network created during the three years in terms of dissemination of knowledge on peace and conflict studies in Europe and South Asia that was gathered during the project. Through Curriculum Development Workshops and Faculty Exchange programmes the network was very actively involved in the propagation of knowledge

Dr. K.R Narayanan Centre for Dalit and Minorities Studies

1. **Name of the Department:** Dr. K.R Narayanan Centre for Dalit & Minorities Studies
2. **Project Title:** Dynamics of Schooling and social Exclusion-A case study of Muslims in the walled city of Delhi
3. **PI:** Prof Azra Razzak
4. **Co-PI:** Nil
5. **Funding Agency:** New Education Group
6. **Amount funded:** INR. 4,50,000.
7. **Duration of the Project:** 1yr
8. **Starting & Completion date of the Project:** Dec-2012 to Nov-2013
9. **Project Objective:** To understand the situation of schooling for children of the walled city
10. **Brief Overview of the Project:** This study examines the dynamics of schooling and explores the finer nuances that surface while accessing schooling by the children of the walled city of Delhi
11. **Infrastructure Created:** --
12. **Project Outcome:** --
13. **Benefit from the Project to the Society:** --

Dr. K.R Narayanan Centre for Dalit and Minorities Studies

1. **Name of the Department:** Dr. K.R Narayanan Centre for Dalit & Minorities Studies
2. **Project Title:** Evaluation studies of Implementation of (i) Scheme for Providing Quality Education in Madrasas (SPQEM) and (ii) Infrastructure Development of private Aided/Unaided Minority Institutes (IDMI)
3. **PI:** Prof Azra Razzak
4. **Co-PI:** Dr. Sabiha Hussain, Dr. Tanweer Fazal JMI.
5. **Funding Agency:** MHRD
6. **Amount funded:** INR. 80,81,000
7. **Duration of the Project:** 10months
8. **Starting & completion date of the Project:** Feb-2013-Nov-2013
9. **Projective objective:** The objective of this project was to evaluate two schemes of the MHRD and to give recommendations and suggest steps or measures that can further be taken by the government to bring an improvement in implementing the schemes for greater benefit to the target group.
10. A brief overview:
On the basis of the evaluation of the schemes, recommendations were given to the MHRD to continue the schemes with certain modifications related to salary, infrastructure, course, appointment of teachers, monitoring of schemes etc., for the proper functioning of the schemes
11. **Infrastructure created:**--
12. **Project outcome:** A National Consultation with Madarsa beneficiaries was held on November, 23, 2013 and Reports submitted to the MHRD
13. **Benefit from the Project to the society:**--

Dr. K.R Narayanan Centre for Dalit and Minorities Studies

1. **Name of the Centre:** Centre for Dalit and Minorities Studies
2. **Project Title:** Awareness and Accessibility of Muslim Women to the National Inclusive Policies/programmes for Empowerment: A Study of Select Districts in Bihar
3. **PI:** Dr. Sabiha Hussain, Associate Professor, Centre for Dalit and Minorities



4. **Co-PI:** Prof. M. Mujtaba Khan, Hon. Director, Academic Staff College



5. **Funding Agency:** University Grants Commission, Bahadur Shah Zafar Marg, New Delhi
6. **Amount funded:** INR. 6,50,000 /
7. **Duration of the Project:** Two years (six months extension)
8. **Starting date of the Project:** February 2010 to September, 2012
9. **Project objectives:**

Broadly the project was an attempt to examine the marginalization of women in accessing the benefits of the development schemes for women's empowerment from a gender and programmatic perspective particularly in the light of the gaps of the Sachar Committee report (2006), the Muslim women's survey (2004) and government focus of the inclusive and integrated approach to development for all its citizens. It was aimed at exploring the obstacles or discrimination Muslim women face in accessing these schemes at institutional level of the family, state and market. Further, an attempt was made to assess the level of Muslim women's awareness of the empowerment schemes of the government and the availability of basic amenities in their areas. Assessing the outreach of the schemes of women's empowerment promoted by the central and state government and to understand the factors limiting their access to availing the facilities and the difficulties/discrimination faced by women was another major objective of this project. Formation of self-help groups amongst Muslim women and availing benefit of the schemes of National Rural Employment Guarantee Act was also covered under this project. Assessing the awareness of Muslim women about reservation of women in Panchayati Raj and a few Acts to protect women from violence were another objective of this project.

10. **A brief overview:**

The findings of the present study are significant in many ways as it focused on the structural, programmatic and other social and regional factors into consideration in investigating the problem than the narrow lense of religion. Accordingly it had suggested effective strategies for policy changes (formulation and implementation)

according to the needs of the women, their skill and market availability and the action required to bring Muslim women in the mainstream of the development process. At policy level also the study has addressed the issue of the disadvantages borne by the religious minorities in India resulting from the politics of exclusion and protected discrimination in terms of social and economic development of the community in general and its women in particular and had highlighted some gaps with regard to inclusive approach for the development of minority community. Since one of the major objectives of the study was to examine the problems faced by women at the institutional level in accessing the schemes, it suggested some strategies for the service providers towards removing the prevailing prejudice and biases against the stereotyped image of Muslim women as less responsive to enter into larger economic activities by organizing a programme to sensitize the state bureaucracy at all levels to include Muslim women in different programmes.

11. **Infrastructure created from the project:**

One computer with printer, one voice recorder, books etc

12. **Project outcomes:**

The findings of the proposed study also brought out an insight into the needs and expectations of the women from the state towards their overall socio-economic development and in identifying the existing gaps in schemes and its accessibility for policy intervention. One of the important findings of this study is the issue of single migration and the problems faced by women in accessing the facilities and how to handle this problem suggested by the women under the study

13. **Benefits from the project to the society:**

Muslim women have been facing multiple problems of being women, being Muslim and being socially, economically and educationally backward. Their awareness and accessibilities to various programmes for the empowerment of women have been very low as compared to the women of the Hindu community for various socio-cultural reasons and the stereotypes and prejudices attached to Muslim women. This project has explored these issues as the major factors for not getting benefits of the government schemes to empower them. The women expressed that government must pay attention to the miserable conditions of women and formulate special schemes and sensitize the officials to remove various misconceptions and help them in accessing the benefits and improve their condition. At social level also it was felt that the men of the community need to be more sensitive in improving the status of women. This project has highlighted that if society/community and the government seriously tries to implement the schemes and sensitize the service providers, women's condition would definitely improve.

AJK Mass Communication Research Centre

1. **Name of the Centre:** AJK Mass Communication Research Centre.
2. **Project Title:** Media resource centre.
3. **Project Investigator:** Shohini Ghosh.



4. **Co-Investigator:** Sabeena Gadihoke



5. **Funding Agency:** Shri Ratan Tata Trust (SRTT).
6. **Amount funding:** Approved grant: INR 70,000,00/- Grant Received INR 53,88,683/-
7. **Duration of the Project:** March, 2006 to Decemebr,2011
8. **Starting date of the Project:** March 13, 2006 to December 31, 2011.
9. **Project objectives:**

The objective of setting up the mcrc was to strengthen the intersection of theory and practice at the ajk mcrc which happens to be one of the country's leading production schools. With film and cultural studies increasingly becoming part of the curriculum of most major universities including Jawaharlal Nehru university (most notably the school of arts and aesthetics) and Delhi university, it was felt that the AJK MCRC with its reputation as a leading film school would be able to make a critical intervention in the pedagogy around film and documentary studies by offering courses that have the benefit of being located at the intersection of practice and theory. The objective was to create an intellectually vibrant space for theoretical engagement, research and study that would complement the hands-on production course of the AJK MCRC. The idea was to sensitize the students to larger theoretical, academic, ethical and aesthetic issues that tend to be routinely marginalized in mainstream media practice. This was also deemed important because the AJK MCRC sought to revive its Ph.D. programme along with its research activities.

The AJK MCRC has had a strong tradition of teaching and producing documentary films. Prof. James Beveridge, one of the early founders of the course was a close associate of the famous documentary filmmaker john grierson and was closely involved with the national film board of Canada. Today, a large number of alumni members are well known documentary filmmakers who continue to make significant interventions in the

debate and practice around documentary filmmaking. Moreover, Delhi is the hub of independent filmmaking practices with elaborate production and dissemination networks. The history and location of the AJK MCRC therefore made it uniquely placed to run such a project

10. [A brief overview:](#)

The James Beveridge media resource centre at the AJK MCRC, Jamia Millia Islamia is an archive and theory centre devoted to the study, research and contemplation of contemporary media praxis with a special focus on Asian cinemas and documentary films. The MCRC instituted through a grant from the Sir Ratan Tata Trust (SRTT) houses curated film collections in addition to journals, books, monographs and catalogues. During the grant period, it conducted courses, offered fellowships and organized special talks, public lectures, conferences, seminars, workshops and special screenings.

11. [Infrastructure created from the project:](#)

Books, journals, DVD's, audio visual softwares, hardware.

12. [Project outcomes:](#)

Please see project end report (pdf attached).

13. [Benefits from the project to the society:](#)

The MCRC became a vibrant and intellectually engaged space where issues that were critical to intelligent and ethical media praxis were given space. Students who studied in the MCRC during the project period benefitted immensely from the national and international exposure they got. This in turn impacted positively on their production and academic work. The grant also made it possible for the AJK MCRC to acquire permanent assets in the form of books, magazines, monographs, catalogues and other audio-visual material.

AJK Mass Communication Research Centre

1. **Name of the Centre:** AJK Mass Communication Research Centre.
2. **Project Title:** National viewership survey on UGC-CEC higher education channel telecasting through cable & satellite and DD DTH.
3. **Project Investigator:** Director, AJK MCRC
4. **Co-Investigator:** Nil
5. **Funding Agency:** UGC-CEC.
6. **Amount funding:** INR 2,00,000.00
7. **Duration of the Project:** 1 year 6 months.
8. **Starting date of the Project:** April, 2010.
9. **Project objectives:**
To know the viewership of UGC-CEC 'Vyas' higher education channel.
10. **A brief overview of the project:**
The media centres were given responsibility to conduct the survey on the basis of question sampling methodology. Similar data was collected from all the 14 media centres from east, north, south-west and central zones. The data was then codified and regional report was generated. The raw data was converted into the excel code sheet and then sent to CEC for collating and generating the national report on the same.
11. **Infrastructure created from the project:** Computer peripherals.
12. **Project outcomes:** Research report was submitted to CEC.
13. **Benefits from the project to the society:**
Able to know the needs of undergraduate students to make subject specific programmes to increase the viewership.
14. **Any other information you may think is important in this regard:**
The inputs were used to improve the objectives of Vyas higher education channel.

AJK Mass Communication Research Centre

1. **Name of the Centre:** AJK Mass Communication Research Centre
2. **Project Title:** Profiling the enemy.
3. **Project Investigator:** Sabina Kidwai, Associate Professor.



4. **Co-Investigator:** None
5. **Funding Agency:** UGC
6. **Amount funding:** Sanctioned amount – INR1,42,000/- Received amount – INR 1,19,500/-
7. **Duration of the Project:** 18 months.
8. **Starting date of the Project:** July 1, 2012.
9. **Project objectives:**
 - a) To look at the representation of Muslims in the television news media and in photographs through two principal terrorist attacks, the rise of the Indian mujahedeen and the Mumbai attack
 - b) Are these images just stereotypes or they reflecting a complex social relationship between the media, society and terrorist organizations?
 - c) How the media supports or helps to legitimize myths about Islam and its followers reducing all diversity into a singular perspective. What gets reported today and what gets left out, tells us a story of hidden biases in the media. Is there any impact of these images on the consumers of the media?
10. **A brief overview of the project:**

To look at the representation of Muslims in the television news media through two principal terrorist attacks, the rise of the Indian Mujahedeen and the Mumbai attack 2007-2009
11. **Infrastructure created from the project:** N/A.
12. **Project outcomes:** Final report completed and submitted.
13. **Benefits from the project to the society:**

The project analyses the media specially the television news media which has considerable influence in determining perceptions.
14. **Any other information you may think is important in this regard:**

The project helped to look at a form of communication which is often criticized but rarely studied because of the lack of proper archiving.

AJK Mass Communication Research Centre

1. **Name of the Centre:** AJK Mass Communication Research Centre.
2. **Project Title:** Public service broadcasting trust (PSBT).
3. **Project Investigator:** Sabina Kidwai, Associate Professor.



4. **Co-Investigator:** Prof. Shohini Ghosh.



5. **Funding Agency:** PSBT.
6. **Amount funding:** Total amount sanctioned -INR 2, 00,000/-, Received -INR 1, 37,734/-, Balance of INR 60,000/- to be received.
7. **Duration of the Project:** 12 months.
8. **Starting date of the Project:** 2007-2008.
9. **Project objectives:**
Students were selected to make two short documentaries which were telecast on Doordarshan.
10. **A brief overview:**
The PSBT gave two films, short documentaries of 22 minutes to two sets of students. One documentary was made on the river Yamuna and its destruction and one was made on the historical heritage of the ruins in Delhi University.
11. **Infrastructure created from the project:** N/A.
12. **Project outcomes:**
The films were submitted and all deliverables given.
13. **Benefits from the project to the society:**
Helped to develop the skills of four former students.
14. **Any other information you may think is important in this regard:**
Students gained experience and the project helped AJK MCRC to strengthen ties with PSBT.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre for Early Childhood Development and Research (CECDR).
2. **Project Title:** Development, Implementation and Evaluation of the Restructured ICDS Curriculum in Selected Pilot Projects in Haryana, Delhi and Rajasthan.
3. **Project Investigator:** Prof. Zubair Meenai, Director, Jamia Millia Islamia, and Prof. Rekha Sharma Sen, Chair Professor, Jamia Millia Islamia.
4. **Team Members:**
 - Curriculum Development
 - a) Dr. Renu Singh, Visiting Professor, Young lives
 - b) Dr. Saba Firdos, Research Assistant, Jamia Millia Islamia
 - c) Ms. Prachi Vashishtha, Assistant professor, Jamia Millia Islamia
 - Training
 - a) Ms. Sufia Azmat, Assistant Professor, Jamia Millia Islamia
 - b) Dr. Neelima Chopra, Assistant professor, Jamia Millia Islamia
 - Evaluation
 - a) Dr. Saba Firdos, Research Assistant, Jamia Millia Islamia
 - Tool Development for evaluation
 - a) Dr. Renu Singh, Visiting Professor, Young lives
 - b) Dr. Saba Firdos, Research Assistant, Jamia Millia Islamia
 - c) Ms. Seema Naaz, Research Assistant, Jamia Millia Islamia
 - d) Ms. Prachi Vashishtha, Assistant professor, Jamia Millia Islamia
 - e) Ms. Sufia Azmat, Assistant Professor, Jamia Millia Islamia
 - f) Dr. Neelima Chopra, Assistant professor, Jamia Millia Islamia
 - g) Dr. Nimisha Kumar, Assistant professor, Jamia Millia Islamia
5. **Funding Agency:** National Institute of Public Cooperation & Child Development, New Delhi and Ministry of Women and Child Development, Government of India.
6. **Amount funded:**

No consultancy was charged by centre. Actual were reimbursed by NIPCCD.
7. **Duration of the project:** 6 months.
8. **Starting and completion date of the Project:** From October, 2012 to March, 2013.
9. **Project objectives:**

The project objectives were to develop a curriculum for two months to be used for preschool education in the AWWs in collaboration with the ICDS staff, to implement the developed curriculum and train the AWWs and to monitor and evaluate the implemented curriculum.
10. **A brief overview/write up of the project:**

NIPPCD had proposed to pilot test a two month curriculum under the restructured ICDS with the objective of improving knowledge, practice and awareness of AWWs. The project was piloted in 3 states viz Delhi, Haryana and Rajasthan. The Centre for Early Childhood Development and Research, Jamia Millia Islamia was identified as the Technical Resource Centre by the Ministry of Women and Child Development, Government of India and the National Institute of Public Cooperation and Child Development, for assisting the latter in piloting the restructured ICDS curriculum in

two projects each in the above states. The process was initiated in October 2012 and culminated in March 2013. A core committee for curriculum development was constituted comprising the ICDS functionaries CDPO, one supervisor and one anganwadi from each of the selected projects), experts from the field of early childhood education and faculty members from the CECDR. Further, 10 days' workshop was organized in three phases to develop the curriculum. Subsequently, a six day training programme was conducted for AWWs of each of the projects after which the curriculum was implemented for two months.

11. [Infrastructure created from the project](#): N/A

12. [Project outcomes](#):

Report of Pilot project provided to NIPCCD.

13. [Benefit from the project to the society](#):

The preschool education component of ICDS is considered the weakest service at present. While there are many reasons for this situation, one of them is the lack of a meaningful curriculum of three hours duration and training of the AWWs to implement the same. Through the successful implementation of the curriculum in the project AWWs in the three states, the study showed that it is possible to carry out meaningful preschool education activities in the AWWs if the AWWs are equipped with a structured curriculum, training is provided to them regarding the same, and monitoring support is provided by Supervisors. This had implications for curriculum development at the national level.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre for Early Childhood Development and Research (CECDR)
2. **Project Title:** Evaluating Efficiency of Intervention with Mothers through Changes in Parenting practices, community's attitudes towards children and children's health and nutrition indicators in Selected Districts in Odisha, India.
3. **Principal Investigator:** Prof. Zubair Meenai, Director, Jamia Millia Islamia, and Prof. Rekha Sharma Sen, Chair Professor

Research Assistants

Review of Literature, Tool development

- a) Dr. Saba Firdos, Research Assistant
- b) Ms. Seema Naaz, Research Assistant

Other team Members

Tool development

- a) Ms. Sufia Azmat, Assistant Professor
- b) Dr. Neelima Chopra, Assistant professor
- c) Dr. Nimisha Kumar, Assistant professor

Training of Research Investigators

- a) Ms. Sufia Azmat, Assistant Professor,
- b) Ms. Prachi Vashishtha, Assistant professor

Advisory Support

- a) Dr. Renu Singh, Visiting Professor, Young Lives, New Delhi

5. **Funding Agency:** Hands to Hearts International ("HHI"), a non-profit, non-governmental organization, USA.
6. **Amount funded:** INR 31, 75,000
7. **Duration of the project:** 17 months
8. **Starting date of the Project:** January 1, 2013 Completion date: May, 2014
9. **Project objectives:**

The present research project is an ex post facto research with causal-comparative research design with one experimental and one control group which aims to investigate the effects of intervention for mothers aimed at enhancing their understanding of child development and improving parenting practices leading to healthy child development such as strengthened love, attachment and bonding between mothers and improved child outcomes related to health and nutrition.

10. **A brief overview of the project:**

Hands to Hearts International (HHI) is an international organization which carries out a variety of training interventions for primary caregivers (mainly mothers and grandmothers) in selected districts in Odisha, India. The districts, predominantly rural and agrarian, are Angul, Puri, Deogarh, Dhenkanal and Sonepur. The training is delivered by their local implementing partner, Viswa Yuva Kendra (VYK).

The following are the objectives of the study which aimed to assess the efficiency of intervention:

- To study the changes in parenting practices along the following dimensions:
 - a) Parent initiated talk, play and songs
 - b) Use of appropriate language and tone

- c) Responsiveness to child's playfulness and exploratory behaviour; child's questions; mutual engagement in child's play activity
 - d) Massage techniques
 - e) Responsiveness to baby cues and child's emotions
 - f) Nutrition and hygiene practices when feeding children and during daily care routines
 - g) To measure the short term and long term gains in knowledge of mothers across child development domains.
 - h) To assess the impact of mothers' changed hygiene and nutrition practices on children's health and nutritional status;
 - i) To examine the extent and nature of fathers' involvement in child rearing
 - j) To determine the impact of training on reduction of parenting stress for mothers.
 - k) To investigate the ripple effect of training manifested as positive changes in community's attitudes towards children and child rearing practices
11. **Infrastructure created from the project:** N/A.
12. **Project outcomes:**
 Research report, Article In peer reviewed journals. Workshops and training implemented by HHI for its partner VYK on the basis of report of the study.
13. **Benefit from the project to the society:**
 The findings from the research study will enable the HHI to take a critical look at their training programme and identify ways of strengthening it and improving its quality. There is evidence that a strong and supportive caregiving relationship supports the development of a child who is physically, intellectually and socially healthy, and more resilient to the damaging effects of poverty and violence. Evidence suggests that early child development can be improved through interventions such as parenting support, with effects greater for programmes of higher quality and for the most vulnerable children.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre for Early Childhood Development and Research (CECDR), Jamia Millia Islamia, New Delhi.
2. **Project Title:** Provision and Assessment of ECD services within the 5 km radius of Jamia Millia Islamia
3. **Principal Investigator:** Prof. Zubair Meenai, Director, Jamia Millia Islamia
4. **Co-Investigators:**
 - a) Dr. Saba Firdos, Research Assistant, Jamia Millia Islamia
 - b) Ms. Seema Naaz, Research Assistant, Jamia Millia Islamia
5. **Funding Agency:** Save the Children
6. **Amount funded:** INR.1, 00,000.
7. **Duration of the project:** 16 month
8. **Starting date of the Project:** October 2012
9. **Project objectives:**
 - a) Mapping provision of ECD services,
 - b) Assessment of quality of ECD provision within these services.
10. **A brief overview of the project:**

The centre has been established for research and advocacy for promoting the holistic development of young children. One of the activities of the centre is aimed towards capacity building of institutions working in the field of ECD. The research is proposed to determine the spread of ECD services around Jamia Millia Islamia & to assess the quality of some of the ECD components.
11. **Infrastructure created from the project:** N/A
12. **Project outcomes:**
 - a) To prepare a directory of institutions operating within 5 km radius of Jamia Millia Islamia.
 - b) The directory of institutions will be use the purpose of placement of the students of M.A programme in Early Childhood Development for field work.
 - c) Capacity building will be organized for teachers from these institutions.
 - d) Workshops and Trainings will be organized for teachers as well.
13. **Benefit from the project to the society:**

This directory will support to parent and community to explore various schools to their children within their premises. The schools and the teacher will be benefited by the awareness and exploration training and workshops.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre for Early Childhood Development and Research (CECDR).
2. **Project Title:** A study of language and literacy practices in early childhood educational programmes.
3. **Project Investigator:** Dr. Neelima Chopra, Assistant professor, Jamia Millia Islamia.
4. **Co-Investigator:** None.
5. **Funding Agency:** Save the Children
6. **Amount funded:** INR 2,00,000.
7. **Duration of the project :** 8 months
8. **Starting date of the Project:** February 15, 2013. to October, 2013.
9. **Project objectives:**

The research objectives of the study were as follows:

 - a) To study the classroom organisation and contents of the classroom in early childhood programmes.
 - b) To examine the language and literacy curriculum in early childhood programmes.
 - c) To analyse the adult-child verbal interactions in the early childhood programmes.
10. **A brief overview/write up of the project:**

The study attempted to document the language learning environment and experiences provided in the early primary classrooms and pre-primary classrooms. The study made use of the qualitative research design and attempted to understand the language and literacy environment and experiences provided to the children in two schools of Jamia Millia Islamia University. Data was collected in Grade One and Two of the Primary Section of Jamia Middle School (morning shift) and in Mushir Fatima Jamia Nursery School, which provides pre-primary education to its students. The findings of the study are discussed as 'Language and literacy environment' provided to the children, 'Language and literacy Curriculum' and 'Adult-child Interactions'.
11. **Infrastructure created from the project:** N/A
12. **Project outcomes :**
 - a) Proposal in the final stages of development.
 - b) Recommendations submitted to the head of the organization.
 - c) Planned Research Colloquium
 - d) Article submitted to an international journal: under process.
 - e) Paper accepted for presentation in International Conference by Department of Educational Studies, JMI on 10th-12 March 2014
 - f) Paper accepted for presentation in National Conference in Chandigarh on 27th-19th March 2014.
 - g) Planned interaction with teachers of the schools in which the study was conducted.
13. **Benefit from the project to the society:**

The project will help us understand the teaching learning practices followed in help children learn language in the early school years. A larger study is being planned across three states to understand the language and literacy practices followed in the states to give a bigger picture of how our children are learning in the early years.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre For Early Childhood Development and Research (CECDR)
2. **Project Title:** Quality of early childhood education: An investigation in the MCD Schools of Delhi.
3. **Principal Investigator:** Dr. Neelima Chopra
4. **Co-Investigator:** None
5. **Funding Agency:** Indian Council for Social Sciences Research (ICSSR), New Delhi.
6. **Amount funded:** INR 6, 00,000.
7. **Duration of the project :** 15 months
8. **Starting date of the Project:** From April 1, 2013
9. **Project objectives:**

Given the critical significance of the early childhood years, it is imperative for every child to get the opportunity to develop in a stimulating environment. MCD schools play a pivotal role in providing early childhood education to children belonging to lower and middle SES strata. However, it has been pointed out that the early childhood programme of MCD schools is not very effective due to a variety of reasons. Objectives of the study are:

- a) To study the structural quality of early childhood programmes of MCD schools
- b) To study the process quality of early childhood programmes of MCD schools.

10. **A brief overview of the project:**

Permissions to conduct observations in nursery, grade one and grade two classrooms were obtained from the MCD headquarters. Once the permission was obtained, the list of all the schools in three municipal corporations with nursery classrooms was obtained from the concerned officials. Three schools from each of the 12 zones under the three municipal corporations were selected randomly from this list. Review of literature was conducted and consulted experts in the area and decided to use the Early Childhood Education Quality Assessment Scale (ECEQAS) developed by Ambedkar University Delhi to assess the quality of early childhood educational programmes. The tool is an observation guide and consists of three parts. Part 1 is an observation recording sheet in which the actual activities being conducted in the classrooms are recorded at 10 minutes interval. Part 2 focuses on the physical or the structural conditions of the school. It includes basic necessities like drinking water, toilets seating arrangements teacher-child ratio and so on. Part 3 focuses on the process aspects and observes the quality of teacher child interaction. Once the tool was identified the research staffs were oriented to the tool and each item was discussed. Pilot-testing of the tool was also conducted. A few modifications were also suggested and incorporated in the tool.

11. **Infrastructure created from the project:** N/A
12. **Project outcomes:** Research papers, articles, workshops & trainings for teachers
13. **Benefit from the project to the society:**

The study will help in understanding the structural and process quality of early childhood educational programmes of MCD schools. The study will throw light on the classroom processes and therefore help in understanding the strengths and weakness of the primary educational institution in Delhi.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre for Early Childhood Development and Research (CECDR)
2. **Project Title:** An Investigation into the dialectical relationship between social situation of development of children and Pedagogical practices in Jamia Nursery school.
3. **Principal Investigator-** Ms. Prachi Vashishtha
4. **Co-Investigator:** None
5. **Funding Agency:** Save the Children
6. **Amount funded:** INR 1, 64,000
7. **Duration of the project:** 8 Months
8. **Starting date of the Project:** From January 24, 2014
9. **Project Objectives:**
 - a) To explore the institutional practices organized around children's everyday lives.
(This will give information about how individual motives and intentions are shaped)
 - b) To investigate the pedagogical practices in the school
(It will give information about the schools as an institution, how teaching-learning practices are organized, activity conducted, interactions patterns between students and teachers, amongst students, and amongst parents and students and power dynamics, relationship between documents/ theory and practice are reflected in the day to day settings)
10. **A brief overview of the project:**

High drop-out rate, poor quality of teaching-learning practices in the classrooms and little space for children's socio-cultural realities in teaching-learning are some of the facts about Indian educational scenario which no one can dispute. Universalisation of elementary education thus, poses a formidable challenge to India: the number of children dropping out, not attending school regularly and never enrolled is immense (Sachdeva, 2003). One of the main factors leading to high drop-out rate and poor quality education is that children find it difficult to relate to the classroom processes (Panda, 2009). Unless children participate in the classroom they will neither learn, nor will stay in the system for long. This relationship is contingent on the quality of classroom discourse and particularly on the ability of the teacher to respond to the needs of culturally and linguistically diverse learners in the class. The lack of basic infrastructure and resources at the school level and influence of neoliberal policies at the level of governance has reduced the focus in the area of education to allocation of funds, monitoring resources, formulating laws and accreditation rather than engaging in core educational discourses which are built on classroom dynamics, teacher-child relationship and teaching-learning practices. National curriculum framework 2005, have clearly indicated the importance of the learning context in which the child constructs one's knowledge. Keeping in mind the context of the learner in which the child is interacting and making sense of her world, is therefore considered very critical in designing teaching-learning processes. This also is our aim to attempt investigating into this research study.
11. **Infrastructure created from the project:** N/A
12. **Project outcomes:** Research papers, articles, seminars, workshops, conferences, trainings, innovations

13. **Benefit from the project to the society:**

This research project does have direct implications to bring about qualitative changes in the classroom dynamics, teacher-child relationship and teaching-learning practices, and therefore in the learning of the child. Based on this understanding, the early childhood educators could take into consideration both the developmental stage and the social and cultural milieu of children when designing the teaching-learning experiences for them. Besides this, the theoretical understanding that this study would provide, could add to the existing literature available in these domain of classroom teaching- learning practices.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre for Early Childhood Development and Research (CECDR).
2. **Project Title:** Quality of Life of Children with Cancer.
3. **Project Investigator:** Dr. Sufia Azmat, Assistant Professor, Jamia Millia Islamia.
4. **Co-Investigator:** None
5. **Funding Agency:** Save the Children
6. **Amount funded:** INR 1.80 Lakh.
7. **Duration of the project:** 9 months
8. **Starting and completion date of the Project:** February 12, 2013 to November 27, 2013.
9. **Project objectives:**

The basic objectives of the study are:

 - a) To explore the effect of cancer on quality of life of children in 6-8 years age group.
 - b) To study the parents and care givers perspective about child's illness.
 - c) To explore the effect of cancer on quality of life of parents and care givers.
10. **A brief overview:**

The present work aimed at studying children with cancer & its impact on their quality of life. The study was majorly qualitative. The study was made in Delhi. The sample was collected through purposive technique. The respondents (parents, care givers and young children) were identified by contacting organization working with children with cancer i.e. Cancer Patients Aid Association.

The sample size was 68 out of which 34 was from young children with cancer and 34 care givers. The tools for data collection were in-depth interview schedule and recreation techniques for gaining information from them. It was prepared on the basis of existing scales relating to quality of life of children with cancer. It was found that the quality of life of children suffering from cancer was seriously impaired. Contrary to normal belief, QoL was hampered not only in the physical and mental domains but also significantly in social belongingness, recreation and leisure time. Parents revealed that the children with cancer are greatly suffering both due to pains and stigmatization because of which their life is quite stressed. And also other siblings and family members also suffer because of the suffering child.
11. **Infrastructure created from the project:** N/A.
12. **Project outcomes:**
 - a) Presented a paper titled impact on quality of life of children with cancer at national social science congress held at AMU.
 - b) Presented a paper titled impact on quality of life of parents of children with cancer at an international conference organized at AIIMS.
13. **Benefit from the project to the society:**

The study results provide implications for understanding the impact of childhood chronic disease on families. The findings of the study will help in developing an ecological perspective of chronic childhood illnesses that includes co-ordinate services between the home and hospital settings. It will also open the avenues for future large-scale studies. The study will have potentially important implications for the upcoming Early Childhood Development Policy.

Centre for Early Childhood Development and Research (CECDR)

1. **Name of the Centre:** Centre for Early Childhood Development and Research (CECDR)
2. **Project Title:** Stress & Resilience in street children: An exploratory study in South Delhi.
3. **Principal Investigator:** Dr. Nimisha Kumar
4. **Co-Investigator:** None
5. **Funding Agency:** Save the Children
6. **Amount funded:** INR 1, 64,000
7. **Duration of the project:** 8 months
8. **Starting date of the Project:** From July 22, 2013
9. **Project objectives:**

The main objective of the study is to explore the stress and resilience in street children aged 5 to 8 years living in South Delhi. The sub-objectives are:

- a) To study the nature and level of stress in these children.
- b) To study resilience in these children.
- c) To study beliefs regarding self, others and life/future in these children.

10. **A brief overview of the project:**

The Children living on the streets are still children undergoing development, despite their life conditions. They experience risks and challenges that, at the same time, may jeopardize their development and promote the acquisition of strategies for dealing with life on the streets. Research indicates that during the early childhood years, it is important for children to have good quality of care and opportunities for learning, adequate nutrition and community support for families, to facilitate positive development of cognitive, social and self-regulation skills. The study of resilience in development has overturned many negative assumptions and deficit-focused models about children growing up under the threat of disadvantage and adversity. The finding that resilience is made of ordinary rather than extraordinary processes offers a more positive outlook on human development and adaptation, as well as direction for policy and practice aimed at enhancing the development of children at risk for problems and psychopathology.

The project involved data collection on daily stress as well as stressful life events as well as information related to various dimensions of resilience (such as coping, spirituality, temperament, competence, social support, etc.) as well as depression. The sample comprised of 60 children aged 6 to 8 years living with or without family on the streets or in shelter homes in South Delhi. In addition, five semi-structured interviews have also been targeted from stakeholders i.e. professionals belonging to various organisations working for street children in Delhi. The study has adopted a Mixed Methods design. The data collection is in the final stages and compilation as well as analysis work is to begin shortly.

11. **Infrastructure created from the project:** N/A

12. **Project Outcomes:**

Paper titled 'Stress and Resilience in street children of South Delhi' presented in the International Conference on Multi-disciplinary health care held at AIIMS, New Delhi on 12th January 2014.

13. **Benefit from the project to the society:**

- a) In line with the global recognition of child empowerment and citizenship as well as the vitality of the life-long developmental implications of the quality of life in the early childhood years, this study will have important implications in terms of contribution to the latest data pool as well as relevant policy making.
- b) These implications will be even more crucial as the sample being studied is one of the most marginalised and stigmatised sections of society, i.e. street children.
- c) It is also possible that discovering the processes that allow street children to develop resilience will create a deeper understanding of the processes involved for other children.
- d) It will help us understand the developmental trajectories of these children living in challenging circumstances as well as the factors which facilitate their transitions into adulthood. The study will generate further avenues for research and intervention for this neglected section of the Indian child populace.

Centre for Culture, Media & Governance.

1. **Name of the Centre:** Centre for Culture, Media & Governance.
2. **Project Title:** Pilot project on Strengthening Media and Communication Studies in India
3. **Project Investigator:** Prof. Biswajit Das.



4. **Co-Investigator:** None.
5. **Funding Agency:** University Grant Commission
6. **Amount funded:** INR 7.5 Lakhs
7. **Duration of the project:** 2011
8. **Starting date of the Project:** March, 2011
9. **Project objectives:**
 - a) How do we address changes in the media enabled environment within the existing disciplines of media?
 - b) Is the discipline equipped to engage with the changing scenario within the existing pedagogical and research set up?
 - c) What research questions are posed within the existing disciplinary setup? Is the teaching of media comfortable with an interdisciplinary orientation?
 - d) How do we visualise the transition from Mass Communication to Communication Studies as an interdisciplinary or multidisciplinary inquiry?
10. **A brief overview/write up of the project:**

This scoping study report 'Strengthening Media and Communication Studies in India' provides an analytical overview of the discipline of Media and Communications in the Indian Universities. The past two decades have seen a phenomenal growth in educational institutions teaching media courses in the country. This growth is an offshoot of the expansion of media sector, which has boosted the need for more professionals for each sector (such as Radio, Television and Internet). To cater to such a need, the UGC has initiated media related courses in both upcoming and existing Central Universities and regional universities and autonomous colleges in India. Alongside, deemed universities and private universities affiliated to UGC have launched media centered postgraduate programmes, diploma programmes, self financed courses, certificate courses and so on. Private initiatives have also entered the field by starting various certificate and diploma courses in addition to the Media Industries or houses, which have begun in-house programmes to nurture skilled media labour.
11. **Infrastructure created from the project:**

Procured select Sage media journals for a year for the centre.
12. **Project outcomes:**

Report on: Strengthening Media and Communication Studies in India, UGC Pilot Study

Centre for Culture, Media & Governance

1. **Name of the Centre:** Centre for Culture, Media & Governance.
2. **Project Title:** Curatorial/ Exhibition Policy Research and Advocacy.



3. **Project Investigator:** Dr. Vibhodh Parthasarathi
4. **Co-Investigator:** None.
5. **Funding Agency:** Dorabji Tata Trust, IFA, and Bangalore.
6. **Amount funded:** INR 13.96 Lakhs.
7. **Duration of the project:** 2010-2012
8. **Starting date of the Project:** June, 2010.
9. **Project objectives:**

This study aimed to map facets of the evolution of arts exhibition in India towards excavating the conditions shaping its policy framework---i.e. institutional structures and administrative protocols. The study results in an illustrated report encapsulating both, the investigative process as well as the analytical outcomes of the project.

10. **A brief overview:**

The research entailed mapping facets of Exhibition policy and curatorial practices in India. In the absence of a coherent and integrated exhibition policy in India, the public display of cultural artifacts has been governed by measures specific to the concerned medium. For instance, the norms governing the public display of cinema—itsself tucked away in the fine print of matters as diverse as censorship, copyright and exhibition—are different from those governing the visual arts, or for that matter, musical performance. It thus became vital to grasp the manner in which legal and macro-economic measures have come to shape—by design or benign neglect—the relationship between artifacts, aesthetics and spectatorship. These ideas were explored through document analyses towards outlining both, the key events illustrating the state’s imagination of exhibitionism, and the underlying, tangential or even inadvertent frameworks of exhibition policy in India.

11. **Infrastructure created from the project :** No

12. **Project outcomes:**

A comprehensive Project Report systematically documenting the key outcomes, including:

- a) Evolution of Museums in India
- b) Interview - Director (Acting), Indian Museum, Kolkata
- c) Evolution of Private Galleries
- d) Perception Study at the 3rd India Art Summit
- e) Documentation of Notes on 48c Public.Art.Ecology
- f) Curatorship and Cultural Policy - A Symposium
- g) Film Exhibition & Festivals
- h) Interview - Founder of Enlighten Film Society

- i) Interview - Artistic Director, International Film Festival of Kerala
- j) Interview - Executive Director, Majlis and Curator, Cinema City Project

National Seminar	<ul style="list-style-type: none"> • Symposium on “Cultural Policy & Curatorship: Perspectives from Switzerland”, Organised by CCMG Jamia Millia Islamia University on 20th January 2011.
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13. [Benefit from the project to the society:](#)

The project created a unique corpus of primary material and secondary, academic readings that helps us to better understand this nascent field.

Centre for Culture, Media & Governance

1. **Name of the Centre:** Centre for Culture, Media & Governance.
2. **Project Title:** Research & Curriculum Development on Media Policy & Law.
3. **Project Investigator:** Prof. Biswajit Das and Dr. Vibhodh Parthasarathi.



4. **Co-Investigator:** Nil



5. **Funding Agency:** Ford Foundation
6. **Amount funded:** INR 70 Lakhs
7. **Duration of the project:** 2010-2013
8. **Starting date of the Project :** May, 2010
9. **Project objectives:**
 - a) To promote MPL as both, an academic field and a focal point of media advocacy in India.
 - b) To develop necessary knowledge on MPL in the country that would aide three principal stakeholders: academia, regulatory bodies & CSOs.
 - c) To integrate MPL as a component of interdisciplinary teaching in Media Studies, Law and associated social sciences.
10. **A brief overview of the project:**

Mapping Media Policy and Law occupies the terrain of research, pedagogy & advocacy on Media Policy & Law (MPL) in India. The project had 3 principal components: Curriculum Development, Research Incubation and Disciplinary Advocacy. The non-resident Fellowships offered under the MPL Project straddled the spheres of Curriculum Mapping, Pedagogical Enrichment and Research Incubation.
11. **Infrastructure created from the project:** N/A.
12. **Project outcomes:**

International Conference	Contours of Media Governance: Teaching, Disciplinarily, Methodology at Jamia Millia Islamia University, New Delhi, 25-27th February 2013
Workshop	Two day Faculty Workshop (North Zone) on Teaching Public Policy, Media and Law by CCMG in collaboration with Department of Public policy, Law & Governance and Department of Culture and Media Studies, Central University of Rajasthan, at Jaipur on November 1-2, 2012
Workshop	Two-day Faculty Workshop (Regional) on Teaching Media Policy and Law by CCMG in collaboration with National Law School of India University,

	Bangalore and Alternative Law Forum, Bangalore at NLSIU on April 24-25, 2012.
Student Workbook	Workshops for Masters in Media Governance
Teaching Modules	Teaching Modules on various themes

13. **Benefit from the project to the society:**

Advocacy done under the Project through Faculty Workshops and Semester-long workshops with students at CCMG and other media departments created interests among the media scholars and policy professionals in the evaluation of the existing courseware of the media studies and production of fresh media pedagogical tools and resources.

Centre for Culture, Media & Governance

1. **Name of the Centre:** Centre for Culture, Media & Governance.
2. **Project Title:** Mediated Democracy, diversity & Visual Publics. Indo-Shastri Canadian Institute Collaborative Project with York University.
3. **Project Investigator:** Prof. Daniel Drache



4. **Co-Investigator:** Prof. Biswajit Das



5. **Funding Agency:** Shastri-Indo Canadian Institute & York University, Canada.
6. **Amount funded:** INR 6 Lakhs
7. **Duration of the project:** 2011-2013
8. **Starting date of the Project:** November, 2011
9. **Project objective:**

Examining the three month period after the Delhi Rape, as well as rape coverage between January 1, 2012 and August 31, 2012, this report is an empirical analysis of four leading Indian English language publications with a combined circulation of 2,946,340: The Hindu, India Today, the Indian Express, and Tehelka. Divided into 5 sections, this report is not about the importance of investigative journalism nor honoring exceptional journalistic abilities, but instead, is focused on the Indian daily diet of news reporting and the incident driven culture of modern journalism.

10. **A brief overview:**

The Delhi Rape provoked an unprecedented examination of gender justice in India. However, our study, based on an empirical analysis of two mass dailies and two weeklies, found that the press failed to strike a balance between a fully developed story and incident based reporting. As our eighth-month media monitoring study showed, reactive, incident based reporting was the norm for the coverage of sexual crimes.

The Delhi rape is too important for the press to return to business as usual. It became a watershed moment in Indian journalism.

Our study revealed that the Delhi Rape had arguably the most extensive coverage of any rape case in India, which is significant. The globalization of the news cycle played a major role in public debate and demand for a significant response from the government to take immediate action to protect women from sex crimes. But there are many lessons to be learned from this remarkable coverage. It is the case that the sensational

aspects of the Delhi Rape occupied centre stage. One rationalization for this is that the primary purpose of any newspaper is to increase circulation. For instance, the attention given to celebrities' views of the Delhi Rape and the personal story of the victim's pain and promise struck a chord with readers and, in turn, fulfilled this economic imperative. However, the Delhi Rape is more than just a horrific crime that ignited anger; it needs to be understood as a matter of gender justice.

Gender justice situates crimes against women within the larger structure of patriarchal power. The structure of power has worked against the interests of women in the way sexual crimes are reported in India and other societies. Over the course of this study, we have worked to better understand the progress the press has made with respect to gender justice against the propensity for sensationalism - a paradox that requires a great deal of thought. On the one hand, when the press follows a story across diverse storylines, moving beyond the incident and crime cycle, it opens the possibility for gender justice sensitive reporting. On the other hand, when the story focuses simply on the sensational aspects of the crime, the powerful gender justice perspective is not well served. And while the press is trapped between these two poles, the transition is incomplete with a long road for it yet to travel.

Our media monitoring of the Delhi Rape demonstrated that much of the news coverage continues to rely on conventional news reporting. There is insufficient recognition that gender violence requires conceptual, analytical and practical changes in the culture of the Indian newsroom. The responsibility for a different kind of news culture relies on both the editorial direction of the newspapers we examined, and also the reporters, who are the frontline professionals. It would be important for journalists, as well as those in charge of editorial direction, to organize a major conference to probe and understand India's rape culture and the gender violence in the mass media.

11. [Infrastructure created from the project](#): N/A.

12. [Project outcomes](#):

Video Conference	Video Conference with Department of Communication & Culture on 'Media Governance' on 23rd November, 2011 with York University
Video Conference	Video Conference on 'Media monitoring of Corruption through Indian print Media' on 16th November, 2011 with York University.
Video Conference	Video Conference on 'Social movements and media: Constraints and Opportunities' on 19th October 2011 with York University
Video Conference	Video Conference on 'New social media and its consequences: Dynamics between state and citizen' on 21st September 2011 with York University

13. [Benefit from the project to the society](#):

This project helped to understand the press coverage on Sexual Violence with the help of analysis four newspapers and two magazines in India.

Centre for Culture, Media & Governance

1. **Name of the Centre:** Centre for Culture, Media & Governance.
2. **Project Title:** Seed Grant for Pilot Studies Enumerating Media Pluralism.
3. **Project Investigator:** Dr. Vibhodh Parthasarathi
4. **Co-Investigator:** None.



5. **Funding Agency:** HIVOS Netherlands.
6. **Amount funded:** INR 6.6 Lakhs.
7. **Duration of the project:** 2010.
8. **Starting date of the Project:** March, 2010.
9. **Project objectives:**

This project sought to understand the structure of the television industry in India by looking at two principal vectors: investigating ownership patterns and analysing programming flows.
10. **A brief overview:**

The conception of this project was aware of the challenges in investigating the ownership of all TV channels, and those in analysing all news content, across various languages. The project was principally geared at evolving a methodology to enumerate ownership and content in the TV sector. The first component took up understanding Ownership, especially sorting the problems of 'Definition' and 'Enumeration', to evolve a conceptual framework to define and measure ownership of TV companies. The second component sought to identify and prioritise parameters for analysing content, with special focus on measuring differences in content across news channels.
11. **Infrastructure created from the project:** N/A.
12. **Project outcomes:**

Detailed project report, "Pluralism in TV News: Mapping Ownership, Measuring Distinction", containing documentation, analyses and presentation of research. In terms of dissemination, the project catalysed a national consultation on enumerating media pluralism, which also yielded a report "Media Pluralism: News Ownership, Content and Advocacy"; Furthermore, also emerging were one published essay, "Media under Corporate Control" and draft of two papers "Reporting Dantewada" and "Competition & Sameness in Indian TV news Channels".

National Seminar	National Roundtable meeting on Media Ownership and Content Advocacy: The case of Broadcast News, Organised by CCMG Jamia Millia Islamia University on 29 th November, 2010.
National Seminar	National Roundtable meeting on Media Ownership and Content Advocacy: The case of Broadcast News, Organised by CCMG Jamia Millia Islamia University on 27 th -28 th October 2010.

National Seminar	National Roundtable meeting on “Monitoring News and Content for Advocacy”, Organised by CCMG Jamia Millia Islamia University on 25 th March, 2010.
National Seminar	National Roundtable meeting on “Enumerating Media Ownership”, Organised by CCMG Jamia Millia Islamia University on 3 rd March, 2010.
National Seminar	Media Pluralism: News Ownership, Content and Advocacy, organized by CCMG in association with IDRC; 17 th November. 2009.

13. **Benefit from the project to the society:**

The project paved the way for a larger debate on measuring media ownership and media content, both within and outside CCMG. More importantly, it helped to conceptualise and methodologically inform another research project at CCMG also engaging with enumerating content of TV news, “Mediated Publics and Machines of Democracy”.

Centre for Culture, Media & Governance

1. **Name of the Centre:** Centre for Culture, Media & Governance.
2. **Project Title:** Scoping Study on Media Advocacy.
3. **Project Investigator:** Dr. Vibhodh Parthasarathi.



4. **Co-Investigator:** None
5. **Funding Agency:** SSRC New York.
6. **Amount funded:** INR 7 Lakhs.
7. **Duration of the project:** 2009-2010
8. **Starting date of the Project:** September, 2009.
9. **Project objectives:**

With the liberalization of South Asian economies and concomitantly their media, the regulatory frameworks governing different segments of the industry have changed. These changes have been tempered by advocacy interventions by different actors such as trade bodies, industry associations, autonomous institutions and civil society organisations. The locus of this project was mapping the ways in which 'public interest' has been articulated (in interventions) by stakeholders, as also in (reactive) measures by formal instruments, i.e. laws, ordinances, Acts etc.

10. **A brief overview:**

The project was a collaborative effort between an advocacy and academic organisations, both leaders in the fields in India. The study involves desk-research on media advocacy initiatives across South Asian countries, with a special emphasis on India. Segments of the media industry covered included those constituting the traditional 'mass media' (print, television and radio) and emergent domain of 'informatics' (internet, mobile and software). Mapping the main stakeholders and interest groups seeking to influence the media environment, and analysing the issues and positions they take up from a public interest perspective

11. **Infrastructure created from the project:** N/A.

12. **Project outcomes:**

The project led to the report "Mapping Media Advocacy in South Asia: A Scoping Study" which contained sections the following sections on contending interests in television advocacy, advocacy in the radio sector, Issues and contests in telecom policy and advocacy in open source movement.

A section from this led to the standalone article 'A Tale of Two Radios: Tracing Advocacy in a Deregulating Milieu' which was published as Working Paper of The Donald McGannon Communication Research Centre, Fordham University, New York.

National	National Consultation meeting on "Media Advocacy in India" Organised by
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Seminar	CCMG Jamia Millia Islamia University on 10 th December, 2009.
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13. [Benefit from the project to the society:](#)

The project helped visualise and scope a larger initiative by CCMG on ways to analyse and teach media policy in India, which led to the project “mapping media policy and law”.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Center for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Synthesis, Characterization and Antiamoebic Activity of Azole & Azine Derivatives against *E. Histolytica*.
3. **Project Investigator:** Dr. Fareeda Athar.



4. **Co-Investigator:** None.
5. **Funding Agency:** DST.
6. **Amount funding:** INR 10, 74,000.
7. **Duration of the Project:** Three years
8. **Starting date of the Project:** June 01, 2008 to May 30, 2011.
9. **Project objectives:**
 - a) Synthesis of Triazine and Tetrazole Derivatives of Terpenes
 - b) Synthesis of [1,2,4-Triazol-3-yl]-4H-Chromen-3-yl-Amine Derivatives of Terpene Synthesis of Dioxazole Derivatives *In Vitro* Antiamoebic Activity Cytotoxicity Studies
10. **A brief overview:**

The compounds that were synthesized in this project contain five/six-membered heteroaryl azole moieties linking terpenes via carbon atoms of the heteroaryl linker or via adjacent nitrogen of the heteroaryl moiety. Due to the good acceptance of herbal drugs among the population, phytopharmaceuticals with synthetic modifications by biologically important moieties could become a suitable therapeutic alternative to current medication. Ninety two such compounds have been synthesized in the project. These compounds have been characterized by IR, UV, NMR and mass spectroscopic methods. The in vitro antiamoebic screening of the ninety two compounds has been done. Besides, the cytotoxicity of these thirty two compounds has been checked using MTT assay.
11. **Infrastructure created from the project:**

Heidolph Rotary Evaporator, High Temperature Stirrer, Inert Gas Chamber, M. P. Apparatus, Refrigerator, Oven.
12. **Project outcomes:**

Publications.

 - a) Mohammad Younus Wani, Fareeda Athar*, Salauddin A. Siddiqi, Subhash M. Agarwal, Amir Azam and Abdul R. Bhat, In vitro antiamoebic and cytotoxicity activity studies of novel monoterpene based 1,4,2-Dioxazole analogues and

calculation of their Physicochemical parameters, acidity constant and lipophilicity, *Eur. J. Med. Chem.*, 46, 9, 2011, 4742-4752.

- b) Mohammad Younus Wani, Abdul Roouf Bhat, Amir Azam, Inho Choi, Fareeda Athar*, Probing the antiamoebic and cytotoxicity potency of novel tetrazole and triazine derivatives Original Research Article, *Eur. J. Med. Chem.*, 48, 2012, 313-320.
 - c) Mohammad Younus Wani, Abdul Roouf Bhat, Amir Azam, Dae Hyung Lee, Inho Choi, Fareeda Athar*, Synthesis and in vitro evaluation of novel tetrazole embedded 1,3,5-trisubstituted pyrazoline derivatives as *Entamoeba histolytica* growth inhibitors, *Eur. J. Med. Chem.*, 54, 2012, 845-854.
 - d) Mohammad Younus Wani, Abdul R. Bhat, Amir Azam, Fareeda Athar*, Nitroimidazolyl hydrazones are better amoebicides than their cyclized 1,3,4-oxadiazoline analogues: In vitro studies and Lipophilic efficiency analysis, *Eur. J. Med. Chem.*, 64, 2013.
- Patent- One
- a) Novel Tetrazolohydrazone Derivative and Pharmaceutical Composition for Preventing or Treating Cancer Containing Thereof; Korean patent Application No. 2-2004-036302-6, Dated 2012.08.06

Thesis awarded:

1. Name of the student : Mohd. Younus Wani

Title of the thesis: Systematic Exploration of Novel Heteroaryl Azole based Compounds and their nanoparticles for Antiamoebic Therapeutic Placement-FCT-Postdoctoral Fellow, Department of Chemistry, UC, Portugal.

13. **Benefits from the project to the society:**

There is an unending fight between the medicinal chemists for the design of a potential drug to treat protozoan parasites infections. The development of resistance and a wide range of debilitating and fatal diseases by the parasites are proving difficult to treat. One of the major health problems in developing countries is Amoebiasis, caused by the enteric dwelling protozoan parasite *Entamoeba histolytica*. *E. histolytica* is capable of causing devastating dysentery, colitis and liver abscess. Due to the societal and economical implications of this pathology, tremendous efforts have been made over the past decades to improve the available therapeutic options.

14. **Any other information you may think is important in this regard:**

Ph.D. students are thankful to UGC for Non-NET fellowship.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Center for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Investigating the involvement of other osmotically active solutes (Non-methylamines) of urea-rich cells in counteracting the urea's effect on protein stability and function.
3. **Project Investigator:** Prof Faizan Ahmad



4. **Co-Investigator:** None.
5. **Funding Agency:** CSIR
6. **Amount funding:** INR26,00,000
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** December01, 2009 to May 30, 2013.
9. **Project objectives:**

Measurement of heat-induced denaturation of RNase-A, lysozyme and α -LA in the presence of urea and non-methylamine osmolytes (glycine, sorbitol, myo-inositol, taurine, β -alanine and alanine) alone and in the presence of combined mixture of urea and non-methylamine osmolytes (2: 1 molar ratio). Glycine: urea; sorbitol: urea; myo-inositol: urea; taurine: urea; β -alanine: urea; and alanine: urea.

Measurement of functional activity parameters (K_m and k_{cat}) of RNase-A and lysozyme in the presence of different concentrations of urea and non-methylamine osmolytes (glycine, sorbitol, myo-inositol, taurine, β -alanine and alanine) alone and in the presence of combined mixture of urea and non-methylamine osmolytes (2: 1 molar ratio). Glycine: urea; sorbitol: urea; myo-inositol: urea; taurine: urea; β -alanine: urea; and alanine: urea.

Measurement of structural changes on the proteins in the presence of different concentrations of urea and non-methylamine osmolytes (glycine, sorbitol, myo-inositol, taurine, β -alanine and alanine) alone and in the presence of combined mixture of urea and non-methylamine osmolytes (2: 1 molar ratio). Glycine: urea; sorbitol: urea; myo-inositol: urea; taurine: urea; β -alanine: urea; and alanine: urea.

10. A brief overview:

Organisms adapt to stressful environment by accumulating organic osmolytes. These osmolytes are acquired most economically by exploiting the metabolic end products. Urea can diffuse across cell membranes and contributes to balance the intracellular and extracellular osmotic equilibrium. Mammalian renal cells are found to accumulate urea in the concentration range of 500-600 mM due to its osmoregulatory mechanisms. However, urea is a potent denaturant and has been observed to perturb

enzyme catalysis and protein-protein interactions. It is believed that, in order to counteract the deleterious effects of urea, organisms use and accumulate another class of osmolytes – the methyl ammonium compounds. *In vitro*-studies have shown that methyl ammonium compounds such as TMAO, sarcosine and betaine stabilize proteins and also have the ability to counteract the denaturing effects of urea.

The generally held belief is that the urea-methylamine counteraction works at a specific ratio (2: 1 molar urea: methylamine) as observed in many elasmobranch tissues and cells. Earlier studies have demonstrated that the counteraction phenomenon at 2: 1 (urea: methylamines) is largely protein specific. In some enzymes, counteraction fails to work. In many cases the counteraction is partial and therefore, the ratio of counteraction varies from protein to protein.

In addition to these methyl ammonium compounds, urea-rich cells build up certain non-methylamine osmolytes, namely myo-inositol, sorbitol, taurine, β -alanine. We wanted to know whether non-methylamines are involved in counteracting the effects of urea on proteins. Although, methyl ammonium compounds namely, sarcosine and betaine are methylated derivatives of glycine, glycine is not a component of urea rich cells, why is it so? We have tried to investigate all these questions in our study.

In terms of preferential binding and preferential exclusion of the co-solutes, osmolytes stabilize proteins by shifting the denaturation equilibrium, N state \leftrightarrow D state toward the left, while urea destabilizes proteins by shifting the denaturation equilibrium toward the right, and urea-osmolyte mixture brings about compensatory effect. Thus, what effects co-solvents will have on the denaturation equilibrium, N state \leftrightarrow D state under the native condition will be known only by measuring ΔG_D° (value of Gibbs free energy change, ΔG_D at 25 °C) in different solvent conditions. To achieve this goal, we performed heat-induced denaturation of RNase-A, lysozyme and α -LA in the presence of the non-methylamine osmolytes and urea alone and measured ΔG_D° (see Tables A1-A3). Using the ΔG_D° values given in Tables A1-A3 for different co-solvents, we constructed the plots of $\Delta \Delta G_D^\circ$ versus [co-solvent] (see Figures A1-A3). It can be seen in Figures A1-A3 that urea decreases ΔG_D° of proteins while non-methylamines increase it and therefore, counteraction is expected. Assuming the effect of urea and non-methylamine on protein stability to be additive, we then predicted the molar concentration of non-methylamines (CO) for the perfect counteraction of urea's effect on the stability of proteins from the following equation,

$$\Delta G_D^\circ(\text{urea, CO}) = \Delta G_D^\circ - m_u[\text{urea}] + m_{CO}[\text{CO}] \quad (\text{A1})$$

where ΔG_D° is the value of ΔG_D° (urea, CO) at zero concentration of urea and non-methylamine at 25°C, and m_{CO} gives the dependence of ΔG_D (CO) on [CO]. Equation A1, predicts that for a perfect compensation, m_u [urea] should be equals to m_{CO} [CO]. Thus, for a protein if m_u : m_{CO} ratio is known, the concentration ratio [urea]: [CO] can be predicted. The m -values from heat-induced denaturations are given in Table A4. The ratios obtained for lysozyme for each of the non-methylamine osmolyte for perfect counteraction are estimated.

sorbitol and glycine do not show any counteraction on functional activity of lysozyme (see Figures A4 and A5).

We have validated our observations on the thermodynamic parameters of the proteins by measuring functional activity parameters (K_m and k_{cat}) of RNase-A and

lysozyme. In agreement with this, results shown in Figures A4 and A5, show that K_m of proteins increases while k_{cat} is decreased in urea's presence. Furthermore, the osmolytes myo-inositol, sorbitol, taurine, β -alanine, alanine, glycine do not alter the functional activity parameters. The effect of urea-non-methylamine mixtures at predicted ratio on the functional activity parameters of proteins are in good agreement with the thermodynamic results. Myo-inositol, β -alanine and alanine perfectly counter the effect of urea on the functional activity of lysozyme while taken together, we observed that (i) myo-inositol, β -alanine and alanine provide perfect counteraction at the predicted ratio, (ii) sorbitol and glycine fails to refold denatured proteins in the presence of urea, (iii) taurine counteracts urea's effect on protein stability and function in protein specific manner

11. [Infrastructure created from the project:](#)

UV Vis Spectrophotometer Jasco V660

12. [Project outcomes:](#)

- a) Singh, LR, Poddar, NK, Dar, TA, Kumar, R, **Ahmad, F.** (2011) Protein and DNA destabilization by osmolytes: The other side of the coin, *Life Sciences* 88, 117-125.
- b) Singh, LR, Poddar, NK, Dar, TA, Rahman, S., Kumar, R, **Ahmad, F.** (2011) Forty years of research on osmolytes-induced protein folding and stability, *J. Iran. Chem Soc.* 8
- c) Khan, S., Bano, Z., Singh, L. R., Hassan, M. I., Islam, A and **Ahmad, F.** (2013) Why is glycine not a part of the osmoticum in the urea-rich cells? *Prot. Pep. Lett.* 20, 61-70.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences.
2. **Project Title:** Identification of Hepatitis B virus genotypes and investigation of molecular mechanisms of life cycle of surface mutant hepatitis B virus (HBV) in lamivudine resistant strains
3. **Project Investigator:** Dr. Syed Naqui Kazim



4. **Co-Investigator:** Prof. Shiv K Sarin, Present affiliation: Institute of Liver & Biliary Sciences, New Delhi Formerly: G. B. Pant Hospital.



5. **Funding Agency:** Department of Biotechnology
6. **Amount funding:** INR 92,19,400
7. **Duration of the Project:** Four Year
8. **Starting date of the Project:** July 06 2009.
9. **Project objectives:**

Development of antiviral resistance had been well reported in chronic hepatitis B (HBV) Indian patients receiving long term lamivudine therapy. Drug resistant isolates of HBV have different replication phenotype. *In vitro* study of the molecular mechanisms of viral life cycle in such types of HBV strains needed special attention. We carried out the study under this project with the intention of following objectives: To study the emergence of changes in the viral genome associated with lamivudine resistant mutations considering the different HBV genotypes. In vitro characterization of other significant mutations (compensatory / supplementary) with lamivudine resistant mutations and their influence on the viral life cycle of patients with different genotypes.

10. **A brief overview:**

Chronic hepatitis B (CHB) infection is a worldwide health problem. Currently four major HBV serologic subtypes and eight HBV genotypes (A-H) are known. Most HBV genotypes or subtypes have distinct geographic distributions. The approved treatment

options for CHB are mainly limited to interferon alpha and few nucleoside/nucleotide analogue(s). Lamivudine (LMV) is one of such nucleoside analogues that remained in common use to treat chronic hepatitis B, in our country. The nucleoside analogue LMV is effective both *in vitro* and *in vivo* in decreasing HBV replication. But the relapse due to cessation of LMV is common. On the other hand, its long-term usage leads to the development of drug resistant isolates. Up to 65% of patients develop the same at 4 years. In Indian cohort of lamivudine treated patients, development of drug resistance is now well reported. It is now known that drug resistant isolates of HBV have different replication phenotype. Moreover, if it is accompanied with other mutations in the viral genome, the same drug resistant isolate replicate differently in *in vitro* system. Taking together, the presence of different genotypes of HBV in our country and frequent emergence of antiviral resistance, results of long-term lamivudine therapy in antiviral resistance associated surface mutants were not known, especially in relation to the different genotypes. Furthermore, *in vitro* study of the molecular mechanisms of viral life cycle in such types of HBV strains was also expected to be of great importance. Therefore it was necessary to conduct the study taking the HBV genotype(s) in to consideration to precisely understand the molecular mechanisms of viral life cycle in drug resistant HBV strains, more particularly when they developed in association with other mutations in the viral genome. Apart from understanding the viral life cycle of drug resistant strains, the outcome of the proposed study was expected to help in evaluating the therapeutic potential of LMV in patients infected with mutant viral strains and also in management of chronic hepatitis B patients who developed drug resistance.

11. Infrastructure created from the project:

The project primarily helped in developing the well-equipped molecular biology laboratory with major sophisticated instruments to carry out the research in the field of virology especially the hepatitis b virus (some of them are- Real time PCR and PCR machines, centrifuges, bacterial and eukaryotic cell culture facilities, Nucleic acids analysis and visualization facilities as Gel documentation system etc.)

12. Project outcomes:

1. Premature truncation of Hepatitis B Virus surface protein due to rtV191I mutation leads to reduced HBsAg secretion in cell culture media.

Sabihur Rahman Farooqui, Masarrat Afroz, Syed Ali Azam, Zaheenul Islam Siddiqui and Syed Naqui Kazim. 8th International Symposium on Alcoholic Liver and Pancreatic Diseases and Cirrhosis. Institute of Liver and Biliary Sciences, November 16th -17th, 2013.

2. Stop codon mutation in YMDD region of polymerase is not favourable for Hepatitis B Virus survival.

Sabihur Rahman Farooqui, Md. Jahoor Alam, Masarrat Afroz, Syed Ali Azam, Zaheenul Islam Siddiqui, Fatima Amir, Shamim Reyaz, Syed Naqui Kazim. Bioworld-2013 "Computational Biology in Disease and Disorder". IIT-Delhi, December 9th -11th 2013.

3. Investigation of percent cell viability of HepG2 cells in presence of lamivudine. Sabihur Rahman Farooqui, Ravindar Kumar, Syed Naqui Kazim. SYSCON-2013, AIIMS-New Delhi, August 23rd, 2013.

4. Hepatitis B virus (HBV) replication strategy and molecular targets for anti-HBV therapy. Syed Naqui Kazim, Sabihur Rahman Farooqui, Syed Ali Azam, Zaheenul Islam Siddiqui, Masarrat Afroz. National conference 24-25th February, 2012: Abstract book Biotech 2012 Current Advances in Biotechnology and Medicine p 11-12.

13. [Benefits from the project to the society:](#)

Once the data generated from the studies of the project are analysed and accumulated and published, it is believed that it would help in evaluating the therapeutic potential of LMV in patients infected with mutant viral strains and also in management of chronic hepatitis B patients who developed drug resistance.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Center for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Differential Expression of Hyaluronan Binding Protein (HABP1) During Ovulation: Implication in Hyaluronan (HA) Matrix Formation Surrounding Cumulus Oocyte Complex (COC) in Normal and Anovulated Conditions in Rat
3. **Project Investigator:** Dr. Sonu Chand Thakur.



4. **Co-Investigator:** Dr. Ilora Ghosh



5. **Funding Agency:** ICMR
6. **Amount funding:** INR 25,83,000/-
7. **Duration of the Project:** Three Year
8. **Starting and completion date of the Project:** April, 2006-March, 2009.
9. **Project objectives:**

Our aim was to examine, expression of Hyaluronan Binding Protein (HABP1) during ovulation and whether this protein is involved in the stabilization of HA network with other ECM organizing proteins that induces downstream signalling, we propose to use the rat model system to study the normal ovulation process and to compare it with the pathological conditions that arrest ovulation induced by the drugs RU486 and indomethacin.

10. **A brief overview:**

The formation and organization of the COC matrix is crucial for COC expansion and is dependent not only on the synthesis of hyaluronan (HA), a major component of ECM, but also its crosslinking and stabilization with other HA binding proteins like CD44, TNF α -stimulated gene 6 (TSG-6), and Pentraxin 3 (PTX-3). Recently, for the first time we have reported the up regulation of HABP1 during follicular development and COC maturation, which suggests its probable role in COC expansion and oocyte maturation. Therefore, to investigate the role of HABP1 in HA matrix stabilization of COCs, interaction of HABP1 with other HA binding proteins will be analysed. Further, in conditions where female sterility occurs like on treatment with indomethacin and in polycystic ovary syndrome (PCOS), which is characterized by impaired cumulus

modification, the expression and role of HABP1 will be studied to analyse its role in female fertility. The expression of matrix metalloproteinases (MMPs) and inflammatory cytokines will also be analysed during folliculogenesis and arrested conditions to explore the signalling networks mediating the HABP1 action during ovulation.

11. **Infrastructure created from the project:**

Culture room was established. We bought CO2 incubator, -20freezer and Laminar flow.

12. **Project outcomes:**

The project started and work is progressing. Research paper writing is in progress

13. **Benefits from the project to the society:**

The expression of matrix metalloproteinases (MMPs), HA binding proteins and inflammatory cytokines will be analysed during folliculogenesis and arrested conditions to explore the signalling networks during ovulation which could help in understanding and treating anovulation condition

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** PROTEIN FOLDING: Conformational and Thermodynamic Studies of the Effect of Amino Acid Substitutions on the Equilibrium, Native State \leftrightarrow Molten Globule State \leftrightarrow Denatured State of Cytochrome.
3. **Project Investigator:** Prof. Faizan Ahmad



4. **Co-Investigator:** None
5. **Funding Agency:** CSIR
6. **Amount funding:** INR 20,00,000
7. **Duration of the Project:** Four Year.
8. **Starting date of the Project:** October 1, 2005-September 30, 2009
9. **Project objectives:**

The sequences of cytochrome-c from hearts of goat (g-cyt-c) and buffalo (b-cyt-c) were determined. g-cyt-c has unique sequence, whereas b-cyt-c has sequences identical to that of the cow cytochrome-c.

Cytochromes-c isolated from the hearts of goat and buffalo were purified following a published protocol. Both preparations gave single band on PAGE.

The folding \leftrightarrow unfolding transition of g- and b-cyts-c induced by LiCl, LiClO₄, and LiBr at pH 6.0 and 25 °C is biphasic, and the intermediate has all the common characteristics of a molten globule (MG). The MG state was characterized by the far- and near-UV CD, Trp fluorescence, ANS or Niel red fluorescence, and viscosity or DLS (dynamic laser scattering) measurements. There exists a pool of MG states, which differ in their structural characteristics and have similar thermodynamic stability.

L94G mutant of the horse cytochrome-c was expressed and purified. The mutant has intact secondary structure, less tertiary structure, and more exposed heme. The mutant L94G has all characteristics of a MG state. There exists a pre-MG state on the folding. The mutant protein and the intermediate state were characterized by far- and near-UV CD, and Trp fluorescence measurements.

10. A brief Overview:

Despite significant advancement that has been made toward the understanding of folding and stability of proteins, it is still not fully understood how the stabilization of protein is encoded in its sequence, and how individual amino acid residue contributes to the stability (1). At present, site directed mutagenesis provides a powerful means of carrying out protein engineering as it enables the substitution of any constituent single residue or several residues at will (2). Another convincing approach is a comparative study of the natural mutations on a protein that is available in different

organisms of the same species. Cytochrome c (cyt-c) has been a model protein in the study of the evolution of protein sequence and structure. Since it evolved more than 1.5 billion years, it has a large number of homologue natural mutants. The homologue natural mutants are quite different in their sequences. Until now more than 200 mitochondrial cyt-c sequences have been reported which do not include the one from the heart of goat and buffalo.

To evaluate the effect of invariant amino acid residues on the stability and folding of N and MG states, we have used two approaches. In one approach, we use site-directed mutagenesis and try to make three mutants viz, Phe10Gly, Leu94Gly and double mutant of Phe10Gly + Leu94Gly. Of all these three one (Leu94Gly) is found to be functional and used for further study.

In the second approach we compared the structure and stability of N and MG states of four natural cyt-c variants (bovine, horse, buffalo and goat). The data for bovine and horse cyts-c has already been achieved and published (3,4). Furthermore, we have determined the sequence of mitochondrial cyt-c from the goat and buffalo.

Among these, cyt-c from goat heart was found to be unique among all amino acid sequences of cyts-c reported till date. Its sequence alignment with the bovine cytochrome c (b-cyt-c) led us to conclude that the goat cyt-c (g-cyt-c) differs in amino acid sequence from bovine (b-cyt-c) at only one position, i.e., Pro44 (bovine).

11. Infrastructure created from the project:

- a) Deep Freezer
- b) Computer with printer & UPS
- c) Laptop
- d) Centrifuge (Table top)

12. Project outcomes:

- a) Moza, Qureshi, Islam, Singh, Anjum, Moosavi_Movahedi, and Ahmad (2006) *Biochemistry* 45, 4695-4702
- b) Rahaman, M.H., Baskar Singh, S., Srinivasan, A., Ahmad, F., Baig, M.A and Singh, T.P. Capra hirus mitochondrial cytochrome c mRNA. Genbank Accession No. DQ176429
- c) Wahid, M., Baskar Singh, S., Srinivasan, A., Ahmad, F., Singh, T.P and Baig M.A. Bubalus bubalis mitochondrial cytochrome c mRNA, partial cds; nuclear gene for mitochondrial product. Genbank Accession No. DQ176430

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** *In vivo* and *In vitro* Paradox of the Compensatory Effect of Methylamines: Urea (1:2) on Stability and Function of Proteins
3. **Project Investigator:** Prof. Faizan Ahmad



4. **Co-Investigator:** None.
5. **Funding Agency:** DST
6. **Amount funding:** INR24,00,000
7. **Duration of the Project:** Four Year
8. **Starting date of the Project:** July, 07,2006 to July 06,-2010
9. **Project objectives:**
 - a). *Investigating the compensation in terms of conformational stability:*

The first objective of this research proposal is to investigate the followings:

 - (i) effect of NaCl on the heat-induced denaturation of proteins,
 - (ii) effect of urea on the heat-induced denaturation of proteins,
 - (iii) effect of methylamines on the heat-induced denaturation of proteins,
 - (iv) combined effect of various concentrations methylamines and urea at 1 : 2 on the heat-induced denaturation of proteins,
 - (v) combined effect of methylamine and urea (1 : 2 ratio) at various concentrations of NaCl on the heat-induced denaturation of proteins, and
 - (vi) Effect of NaCl on urea-induced denaturation of proteins at 25 °C.
 - b). *Investigating the compensation in terms of functional activity:*

The second objective is to measure the functional activity parameters (i.e., K_m and k_{cat}) of enzymes in the presence of

 - (i) different NaCl concentrations,
 - (ii) different urea concentrations,
 - (iii) different methylamine concentrations
 - (iv) different urea and methylamine concentrations (2 : 1 ratio), and
 - (v) 2 : 1 ratio of urea and methylamine at different NaCl concentrations.
 - c). *Investigating compensation in terms of secondary and tertiary structure:* To understand structural basis of the urea-methylamine compensation and the possible involvement of the effect of salt in bringing about complete compensation, CD and fluorescence spectra of proteins will be measured in the presence and absence of these cosolvents (methylamine, urea and salt) in the experimental conditions given in objectives 1 and 2.

We planed to use three proteins ribonuclease-A, lysozyme and β -lactalbumin. For measuring the functional activity, the two enzymes RNase-A and lysozyme were used.

The reason for choosing NaCl as salt was that it is the predominant salt inside the cell.

10. **A brief overview:**

The compatible osmolyte glycine betaine (GB) is the most efficient osmoprotectant and best excluder from the protein surface. It can reverse protein aggregation and correct mutant protein defects and counter the harmful effects of urea and salts *in vivo* and *in vitro*. In this study we have investigated the pH dependence of the stabilizing effect of GB on three different proteins, namely, α -lactalbumin (α -LA), lysozyme and ribonuclease-A (RNase-A). We show here that (a) GB stabilizes RNase-A at all pH values, and (b) GB has opposite effects on two proteins at high pH and low pH values, namely, α -LA and lysozyme. This conclusion was reached by determining T_m (midpoint of denaturation), ΔH_m (denaturational enthalpy change at T_m), ΔC_p (constant-pressure heat capacity change) and ΔG_D° (denaturational Gibbs energy change at 25 °C) of proteins in the presence of different GB concentrations. Another conclusion of this study is that ΔH_m and ΔC_p are not significantly changed in the presence of GB. This study suggests that other methylated glycine osmolytes may also behave in the same manner.

We report the effects of stabilizing osmolytes (low molecular mass organic compounds that raise the midpoint of thermal denaturation) on the stability and function of RNase-A under physiological conditions (pH 6.0 and 25 °C). Measurements of ΔG_D° (Gibbs free energy change at 25 °C) and kinetic parameters, K_m (Michaelis constant) and k_{cat} (catalytic constant) of the enzyme mediated hydrolysis of cytidine monophosphate (C > p) enabled us to classify stabilizing osmolytes into three different classes based on their effects on kinetic parameters and protein stability. (a) Polyhydric alcohols and amino acids and their derivatives do not have significant effects on ΔG_D° and functional activity (K_m and k_{cat}). (b) Methylamines increase ΔG_D° and k_{cat} but they decrease K_m . (c) Sugars increase ΔG_D° but they decrease both K_m and k_{cat} . These findings suggest that, among the stabilizing osmolytes, (a) polyols, amino acids and amino acid derivatives are compatible solutes in terms of both stability and function, (b) methylamines are the best refolders (stabilizers), and (3) sugar osmolytes stabilize the protein but they apparently do not yield functionally active folded molecules.

11. **Infrastructure created from the project:**

Spectrofluorometer with accessories (Jasco FB 6200)

12. **Project outcomes:**

Singh, L. R., Dar, T. A., Haque, I., Anjum, F., Moosavi_Movahedi, A. A., and Ahmad, F. (2007) Testing the Paradigm that the Denaturing Effect of Urea on Protein stability is Offset by Methylamines at Physiological Ratio of 2:1 (Urea:Metylyamines). *Biochim. Biophys. Acta* 1774, 1555-1562.

Singh, L. R., Dar, T. A., and Ahmad, F. (2009) Living with Urea Stress. *J. Biosc.* 34, 321-331.

Singh, L. R., Dar, T. A., Ahmad, S., Jamal, S., Ahmad, F. (2009) Methylated Glycine Have Opposite Effects on Proteins at low pH Values. *Biochim. Biophys. Acta* 1794, 929-93.

Jamal, S., Poddar, N. K., Singh, L. R., Dar, T. A., Rishi, V. and Ahmad F. (2009) Relationship between functional activity and protein stability in the presence of all classes of stabilizing osmolytes, *FEBS J.* 276, 6024-6032.

Singh, R. L., Poddar, N. K., Dar, T. A., Kumar, R. and Ahmad, F. (2011) Protein and DNA Destabilization by Osmolytes: the other side of the coin, *Life Sciences* 88, 117-125.

Singh, L. R., Poddar, N. K., Dar, T. A., Rahman, S., Kumar, R. and Ahmad, F., Forty Years of Research on Osmolyte-induced Protein Folding and Stability, *Iran. J. Chem. Soc.*, (2011)

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Would the heat/acid denatured state serve as reference state for protein folding?
3. **Project Investigator:** Prof. Faizan Ahmad



4. **Co-Investigator:** Dr. Asimul Islam



5. **Funding Agency:** UGC
6. **Amount funding:** INR 10,00,000.00
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** May 01, 2009 to April 31, 2012.
9. **Project objectives:**

The objectives of this research is to find out Is G_{ND} a property of both protein and the denaturant or the protein alone?

Is there a native like residual structure in the heat/acid denatured state that can be cooperatively removed by the addition of strong chemical denaturants, such as urea and GdnHCl?

Is the heat denatured state and GdnHCl denatured state in terms of all thermodynamic parameters identical?

Incorporation of Gibbs energy change values in a thermodynamic cycle.

10. **A brief overview:**

The denatured states of proteins have attracted increasing attention. This interest arises from the realization that the denatured state is the only experimentally achievable state of a protein that can be taken as initial reference state for considering the folding and stabilizing the native protein structure. However, a denatured state can play this role only if it can be associated with a completely unfolded, random coil conformation of a polypeptide chain. Most of the efforts have gone to characterizing the GdnHCl (or urea) denatured state and the heat denatured state of proteins. All calorimetric studies of denaturation of proteins assumed both thermally and chemically denatured states to be thermodynamically identical. Contradictorily, all the

pieces of evidence coming from the characterization of heat denatured proteins using different conformational techniques have shown that heat induces only a partial unfolding in the protein and residual structures persist in the thermally denatured states. Are we justified in assuming a thermally denatured state of a protein to be as unfolded as GdnHCl denatured state? Despite of many efforts, there is still uncertainty and controversy regarding their nature.

Therefore it will be worthwhile to reinvestigate the present controversy otherwise it will be difficult to interpret data obtained from conformational techniques.

This work is therefore carried out to understand the extent of unfolding of proteins by heat, GdnHCl and urea. For this purpose, four proteins namely, ribonuclease-A (RNase-A), lysozyme and apo- β -lactalbumin (apo-La) have been taken. CD, which is an excellent probe to measure the change in the entire polypeptide backbone conformation, is used for these studies. The transition between the native (N) state and GdnHCl (or urea) denatured (D) state was measured at 25 °C for all the proteins. The transition between the heat denatured (X) state and D state was measured at 65 °C in the case of lysozyme, 56 °C in the case of RNase-A, and 60 °C in the case apo-La. The pH values chosen for all proteins were such as to have the proteins in the pre-transition region of the pH-induced denaturation and get complete transition curves for GdnHCl-induced, urea-induced and the heat-induced denaturation of all the proteins

We collected both the conformational and thermodynamic data for the transitions N state \leftrightarrow D state, N state \leftrightarrow X state and X state \leftrightarrow D state. GdnHCl and urea are known to give the same denatured state of each protein that has been chosen for this study.

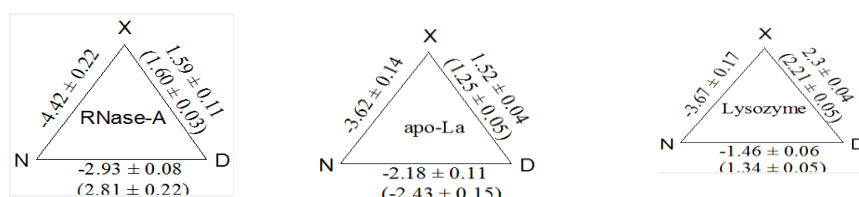
Our results show that X state can be further unfolded with a significant change in $[\theta]_{222}$ and the mean residue ellipticity value of the heat denatured state was significantly different from both the native and the GdnHCl denatured state. This means that on thermodynamic ground the thermally denatured state i.e., the X state must be in the thermodynamic equilibrium N state \leftrightarrow X state \leftrightarrow D state.

It has also been reported that ΔC_p of a protein is proportional to the nonpolar surface area exposed to water upon unfolding. It is therefore expected that the ΔC_p of the protein in the X state will increase in presence of chemical denaturants (GdnHCl or urea) because thermally denatured state has been shown to possess hydrophobic clusters. Our results show that for all the four proteins suggest that there is a significant increase in the ΔC_p of the X state in presence of both denaturants.

Since several assumptions and conditions are used in the analysis of denaturation curves, evaluation of unfolding free energy changes is authentic and that the X state lies in the equilibrium, N state \leftrightarrow X state \leftrightarrow D state, so we intended to construct a thermodynamic cycle. One constraint to construct the thermodynamic cycle was that we had ΔG_D^0 values for the processes, N state \leftrightarrow X state, X state \leftrightarrow D state and N state \leftrightarrow D state at different temperatures. The predicted value of $\Delta G_{X \rightarrow D}^0$ ($= \Delta G_{N \rightarrow D}^0 - \Delta G_{N \rightarrow X}^0$) is in excellent agreement with the observed value of $\Delta G_{X \rightarrow D}^0$. The thermodynamic data obtained for all proteins were incorporated in the thermodynamic cycle (see Figure I).

The successful working of a thermodynamic cycle at these temperatures meant that our assumptions and estimations for all the processes are true. **This proves** that

residual structures exist in thermally denatured proteins, which can be cooperatively removed on



Thermodynamic cycle of RNase-A at 56 °C, lysozyme at 65 °C and apo-La at 60 °C.

In summary, we would like to conclude that (i) Extent of unfolding of the denaturants, GdnHCl and urea are similar. (ii) ΔG_D is a property of the protein alone and not that of a protein and the denaturant. (iii) Residual structures persisted in thermally denatured states, which could further be denatured on addition of chemical denaturants like GdnHCl and urea, and (iv) there is increase in $\Delta C_{p,D}$ as compared to $\Delta C_{p,X}$ for N state \leftrightarrow D state and N state \leftrightarrow X state transitions, respectively.

11. **Infrastructure created from the project:** Fraction Collector was upgraded.

12. **Project outcomes:**

Following achievements are the outcome of the above project

- A thermally denatured protein consists of residual structures that can further be removed on the addition of denaturants like GdnHCl and urea.
- An unequivocal cooperative transition is observed for X (heat denatured) state \leftrightarrow D (GdnHCl or urea denatured) state transition.
- Thermally denatured and chemically denatured states are conformationally different.
- Thermally and chemically denatured proteins are thermodynamically different:
 - At 25 °C $\Delta G^0_{N \rightarrow X}$ is less than $\Delta G^0_{N \rightarrow D}$.
 - $\Delta C_{p,X}$ is less than $\Delta C_{p,D}$.
 - At 25 °C ΔH^0_D is less than ΔH^0_X
- The enthalpy change on denaturation shows a strong dependence on the concentration of the chemical denaturant.
- The hydrophobic interaction is important in stabilizing both the native state and the thermally denatured state of proteins.
- Both LEM and nonlinear least-squares analysis of the same set of (y , [denaturant]) data give, within experimental errors, identical values of $\Delta G^0_{N \rightarrow D}$ and $\Delta G^0_{X \rightarrow D}$ for both urea-induced and GdnHCl-induced denaturations of a protein, suggesting that this thermodynamic property is the property of the protein alone.

Since for a protein ΔG^0 is not path dependent and since thermal denaturation is a two-state process, therefore the GdnHCl- and urea-induced denaturations follow a two-state mechanism as well.

13. **Benefits from the project to the society:** N/A

14. **Any other information you may think is important in this regard:** N/A.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Center for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Patterning of Nanostructure Metal Oxides using porous alumina for Biosensing Applications.
3. **Project Investigator:** Prof. Zubaida A Ansari



4. **Co-Investigator:** None
5. **Funding Agency:** UGC
6. **Amount funding:** INR 10,08,000
7. **Duration of the Project:** Three Years
8. **Starting date of the Project:** February 01,2009 to January 31, 2012
9. **Project objectives:**
 - Fabrication of various nanostructured metal oxides (MOx) and their composites as well as patterning using AAO
 - Material characterization; XRD, FESEM, HRTEM, FTIR and UV-Visible spectroscopy.
 - Immobilization of bio-receptor molecules over nanostructured MOx
 - Sensor Fabrication and characterization; I-V, cyclic voltametry and optical characterization

10. **A brief overview:**

Nano-phase materials are emerging as prime candidates for the next generation. An enormous research work is being carried out on nano-materials and their applications. However, yet a lot of knowledge has to be generated to improve the understanding on the synthesis, characterization, properties and applications of nano-materials. Therefore, it is the need to carry out further/detailed investigations in this emerging field.

Anodic porous alumina (AAO), which has a typical naturally occurring self-ordered structure, has recently attracted increasing attention material fabrication of devices on the nanometer scale, such as electronic and photo-electronic, sensing and ultra-filtration devices. For, these applications, well characterized ideal pore configurations are particularly useful and may be schematically represented as a honeycomb structure which is characterized by a close-packed array of columnar hexagonal cells, each containing central pore normal to the substrate.

The research work carried out was therefore focused on (a) the fabrication of uniformly distributed AAO, (b) a feasibility study to develop novel bio-device using nano-template of anodic aluminum oxide.

11. **Infrastructure created from the project:**

Electrometer, Tube Furnace, Spin Coater

12. Project outcomes:

List of Publications

1. Young Soon Kim, Rizwan Wahab, Hyung-Shik Shin, S. G. Ansari and Z. A. Ansari, A simple method to deposit palladium doped SnO₂ thin films using plasma enhanced chemical vapor deposition technique, REVIEW OF SCIENTIFIC INSTRUMENTS 81 (2010)
2. 2. Z.A. Ansari, S.G. Ansari, Hyung-Kee Seo, Young-Soon Kim, Hyung-Shik Shin, Urea sensing characteristics of Titanate nanotubes deposited by electrophoretic deposition method, Accepted for publication in Jr. of Nanoscience and Nanotechnology.
3. 3. Ravi K. Kumar, M. Husain, Z.A. Ansari, Correlation between morphology, structure and properties of ZnO nanostructures fabricated by rapid thermal CVD, Communicated to Jr. Nanoscience and Nanotechnology

13. Benefits from the project to the society:

A technique and novel material was developed to improve the sensitivity of biosensors using nanopores of alumina with various metal oxides

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Effect of bio materials on the photo-conversion properties of TiO₂ based Dye-sensitized Solar Cells.
3. **Project Investigator:** Prof. Shafeeque Ahmed Ansari



4. **Co-Investigator:** None
5. **Funding Agency:** UGC
6. **Amount funding:** INR 9,81,000
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** February 01, 2011- January 31, 2014
9. **Project objectives:**

Material and DSSC characterization using standard characterization techniques

The main objective will be to develop cheap and eco-friendly material for better conversion of photon energy at lower cost and study the effect of biomaterials on the performance of fabricated DSSCs using following steps;

- a) Material preparation using nanomaterial synthesis techniques.
- b) Biomaterial Immobilization either by cross-linking or covalent bonding.
- c) DSSC fabrication using conventional sandwich technique.

10. A brief Overview:

In this proposal, various nanostructures of TiO₂ will be synthesized by variety of synthetic techniques, such as sol-gel process, hydrothermal process, sonochemical, etc. The synthesized TiO₂ nanomaterials will be characterized for structural, optical and photovoltaic properties. Focus will be on to synthesize high surface area material to obtain better efficiency compared to low surface area material. The most important part of the proposal will be to study the effect of bio-materials on the photo-conversion efficiency. Hybrid materials will be synthesized based on metal oxide and bio-material combinations. This will be achieved by immobilizing the biomaterials either by cross-linking or covalent bonding methods. The chosen biomaterials will be expected to increase the electron conduction either by protein-enzyme catalytic mechanism or as an active layer. It is expected that the prepared hybrid materials will enhance the transport properties, and produce efficient DSSCs with high conversion efficiency compared to the earlier reported work

11. Infrastructure created from the project:

Equipments: Solar cell testing system, Keithley 2400 source meter, Hydrothermal reactor, Ultrasonic bath

12. Project outcomes:

Nanostructured materials of TiO₂, ZnO, SnO₂, composite TiO₂ (Sn, Cd, Cu doped TiO₂) were synthesized by sol-gel and hydrothermal method. Most of these are already published.

Four different flower species were randomly selected based on the petal colour. Calendula Orange, Calendula Yellow, Dahlia Yellow, and Sweet Poppy were obtained from horticulture department of the university.

To study the effect of these flower extracts, 100 mg of doped powders were mixed in 2 ml of flower extract solution and then sonicated for few minutes and dried at 50°C for paste preparation and film deposition. Films were deposited using conventional screen printing technique on FTO substrate. Screen ink (paste) was prepared using mixed powder and organic binders. These films were dried at 50°C and used to study the effect of photon irradiation on their electrical properties.

List of papers published with support from Project.

- a) S. G. Ansari, Laitka Bhayana, Ahmad Umar, A. Al-Hajry, Salem S. Al-Deyab, Z. A. Ansari, *Understanding the effect of flower extracts on the photoconducting properties of nanostructured TiO₂*, Journal of Nanoscience and Nanotechnology, 12, 7860-7868 (2012).
- b) S. G. Ansari, Ahmad Umar, A. Al-Hajry, Salem S. Al-Deyab, Z. A. Ansari, *Effect of Flower Extracts on the Optoelectronic Properties of Cd and Sn Doped TiO₂ Nanopowder*, Science of Advanced Materials, 04 (2012) 763-770.
- c) Taimur Athar, Ameer Hashmi, Ali Al-Hajry, Z.A. Ansari, S.G. Ansari, *One-pot Synthesis of Nb₂O₅ Nanopowder and its Characterization*, Journal of Nanoscience and Nanotechnology, 12, 7922-7926 (2012).
- d) Atul Kulkarni, Rizwan Wahab, S. G. Ansari, Tae-Sung Kim, Salem S. Al-Deyab, Z. A. Ansari, *Photoconducting properties of a unit nanostructure of ZnO assembled between microelectrodes*, Journal of Nanoscience and Nanotechnology, 12, (2012) 2406–2411.
- e) Abdul Hakeem, S.G. Ansari, Taimur Athar, *Synthesis of SnO₂ nanoparticles by facile aqueous and non-aqueous solution process: structural and optical properties*, Science of Advanced Materials, 4, (2012) 161-165.
- f) Rizwan Wahab, Z. A. Ansari, S. G. Ansari, Young-Soon Kim, Dong-Hyun Kim, and Hyung-Shik Shin, *Hydrogen Storage Properties of Heterostructured Zinc Oxide Nanostructures*, Journal of Nanoengineering and Nanomanufacturing, 1, (2011) 188–195.
- g) Hyung Kee Seo, S.G. Ansari, Salem S Al-Deyab, Z. A. Ansari, *Glucose sensing characteristics of Pd-doped tin oxide thin films deposited by plasma enhanced CVD*, Sensors and Actuators B: Chemical, 168, (2012) 149-155.
- h) S. C. Kulkarni, C. S. Aher, R. Y. Borse, B. G. Bharate, Salem S. Al-Deyab, S. G. Ansari, and P. K. Khanna, *Gas Sensing Properties of Nanocrystalline Indium Oxide Synthesized by Sol-Gel Method*, Advanced Science Letters, 5, (2012) 109-113.

- i) Z. A. Ansari, Mazhar-ul-Haque, Hyung-Kee Seo, Ahmad Umar, Ali Al-Hajry, S. A. Al-Sayari, Hyung-Shik Shin, S. G. Ansari, *Urea Sensing Properties of Cu-Doped Titanate Nanostructures*, Advanced Science Letters, 4, (2011), 3451-3457.

13. [Benefits from the project to the society:](#)

The proposed material for DSSC will help in producing cheaper solar cells and hence it will benefit the society as a cheap and alternate energy source.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Regulation of HABP1 Expression During Follicle Development and Cumulus Oocyte Complex Maturation in Rat Ovary.
3. **Project Investigator:** Dr. Sonu Chand Thakur



4. **Co-Investigator:** Dr. Ilora Ghosh



5. **Funding Agency:** DST Fast Track.
6. **Amount funding:** INR 13, 72,000.
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** April 2006-March 2009
9. **Project objectives:**

The main objectives of the project were to study the expression and localization pattern of HABP1 in developing and ovulating follicle and to investigate expression of HABP1 in rat cumulus oocyte complexes during *in vivo* and *in vitro* maturation. The expression level of HABP1 upon hyaluronidase treatment during COC expansion will be checked to see the direct association of HABP1 with HA during ovulation.

10. **A brief Overview:**

It is proposed to study the expression and localization of HABP1 in developing and ovulating follicles and during COC expansion *in vitro* and *in vivo*. Since such conditions potentiate mechanisms of self destruction of cells within ovary, studies related to HABP1 in these conditions would provide valuable information on the expression, role and significance of this binding protein with the associated apoptosis related mechanisms. Further, efforts will also be made to analyze and confirm any altered pattern of expression of this protein in condition that affect ovulation

11. **Infrastructure created from the project:** N/A.

12. **Project outcomes:**

Thakur SC, Datta K. Higher expression of hyaluronan binding protein 1 (HABP1/p32/gC1qR/SF2) during follicular development and cumulus oocyte complex maturation in rat. Mol Reprod Dev. 2008 Mar;75(3): 429-38

13. **Benefits from the project to the society:**

The expression of Hyaluronan binding protein 1 was studied during folliculogenesis which will further help in understanding the role of this protein during ovulation.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Study of Antifertility Efficacy and Toxicity of Plant *Piper Longum* in Female Rat.
3. **Project Investigator:** Dr. Sonu Chand Thakur



4. **Co-Investigator:**
5. **Funding Agency:** UGC
6. **Amount funding:** INR 10,35,030
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** February, 2009-January, 2012.
9. **Project objectives:**

Our main objectives of the project were to assess antifertility potential and toxicity of *Piper longum* seed extract in female rats.
To examine the toxicity of the plant if any
10. **A brief Overview:**

It is proposed to study the expression and localization of HABP1 in developing and ovulating follicles and during COC expansion invitro and invivo. Since such conditions potentiate mechanisms of self destruction of cells within ovary, studies related to HABP1 in these conditions would provide valuable information on the expression, role and significance of this binding protein with the associated apoptosis related mechanisms. Further, efforts will also be made to analyse and confirm any altered pattern of expression of this protein in condition that affect ovulation
11. **Infrastructure created from the project:**

Microcentrifuge, Electrophoresis unit, stereomicroscope were purchased
12. **Project outcomes:** Papers communicated.
13. **Benefits from the project to the society:**

Fertility control is an issue of global and national public health concern. Regarding to the importance of fertility control and side effects of the existing contraceptive methods the usage of biologically active botanical substances or fertility-regulating agents of plant origin which are eco-friendly in approach and interfere with the natural patterns of reproduction becomes necessary. *Piper longum* hexane fraction showed antifertility activity in female rats. So this plant could be considered for potential anti-fertility agent.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Gemini surfactants as structure stabilizer for proteins under thermal denaturation.
3. **Project Investigator:** Dr. Rajan Patel



4. **Co-Investigator:** None.
5. **Funding Agency:** UGC
6. **Amount funding:** INR 12,07,147
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** February 1, 2011 to January 31, 2014
9. **Project objectives:**

The main goal of the project is to explore the secondary structural change of model proteins in the interaction with Gemini surfactants has been examined not only under ordinal condition but also under heat treatments at high temperatures. To achieve our goal we will synthesised the Gemini surfactants and used it as a structure stabilizer for model proteins

10. **A brief Overview:**

Proteins are the most abundant and versatile macromolecules in living systems and serve crucial functions in essentially all biological processes. The stabilization of proteins is a priority for several important fields, most notably the pharmaceutical industry. Protein-based therapeutic drugs have demonstrated significant efficacy in controlling and curing disease. Unlike traditional small molecule based drug therapies, a major hurdle in the development of protein drugs is the challenge of maintaining the protein in the folded state throughout processing and also during storage at the end point-of-use. When a protein is taken from its native environment, it is often unstable and denatured. Because the three-dimensional structure of the protein is often responsible for its functional activity, much work has been dedicated to finding compounds and strategies that will help stabilize proteins outside of their native environment. Exploring novel molecules that might increase protein stability, an excipient would ultimately be beneficial in the treatment of disease. To prevent damage during thermal denaturation, additives like surfactants need to add to the protein solution. Since some proteins demand very precise conditions in the absence of heating, they can be handled only for a few days. Protein-based medicines have shown that they can control and cure diseases, and a market for protein-based pharmaceuticals has recently sprung up. However, protein instability still limits protein-based pharmaceuticals and therapeutics, it is important to develop methods to preserve active proteins. Interactions of proteins

with surfactants have been studied for many years because their mixtures have very important applications in biosciences, foods and cosmetics, drug delivery, detergents, and biotechnological processes. The interactions may be advantageous and stabilize the proteins or they may decrease the protein stability, depends on the characteristics of both surfactants and proteins. A target protein in the interactions has not been simultaneously affected by any other factor except for the coexisting surfactant.

11. **Infrastructure created from the project:**

(i) Digital thermostatic water baths, (ii) Digital Conductivity meter, (iii) Electronic Molecular interaction of cationic gemini surfactant with bovineserum albumin: A spectroscopic and molecular docking study, Process Biochemistry, In Press, 2014. Balance, (iv) Oven, Magnetic stirrers, Heating Mantles

12. **Project outcomes:**

- a) An Insight into the Binding between Ester-Functionalized Cationic Gemini Surfactant and Lysozyme, Journal of Luminescence, Under Review. 2014
- b) Mixed Micellization and Interfacial Properties of IonicLiquid-Type Imidazolium Gemini
- c) Surfactant with Amphiphilic Drug Amitriptyline Hydrochloride and its Thermodynamics, Journal of Chemical Thermodynamics, Submtted.
- d) Interaction of Gemini Surfactant with the different concentration of BSA: A Spectroscopic Study, Luminescence, Submitted.
- e) Conference participation
- f) Effect of Different Concentrations of Gemini Surfactant on Protein Conformation, National Symposium On Frontier Of Biophysics, Biotechnology & Bioinformatics, Department Of Biophysics & Centre For Excellence In Basic Sciences, University Of Mumbai, January 13-16, 2013
- g) An overview of thermodynamic aspects of bovine serum albumin with N,N'-bis(dodecyloxycarbonyl)-N,N',N'-tetramethylethanediamine gemini surfactant by spectroscopic techniques, IISC, JMI December 2012

13. **Benefits from the project to the society:**

Most of the research on surfactant-protein interactions is focused on single-chain surfactants. Dimeric or Gemini surfactants, which are surfactants made of two hydrophobic chains and two polar head groups connected by a spacer at or near the head groups, have received considerable attention due to its unique properties, in particular lower critical micellar concentration (cmc), when compared to the correspondent single-chain conventional surfactant. These studies have drawn the interest of many chemists, physicist, biotechnologists, pharmacist and many other researchers. However, attention obviously must be paid to the effect of stabilization and solubilization on the higher order structure of the protein, since most protein function is related to that higher order structure. Thus, this work aims to understand the effect of Gemini surfactants on protein structure, and thereby development the utility of Gemini surfactants in dissolving and handling proteins

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Structural and Biophysical characterization of cytochrome c, a major component of mitochondrial respiration



3. **Project Investigator:** Dr. Md. Imtaiyaz Hassan
4. **Co-Investigator:** None
5. **Funding Agency:** DST
6. **Amount funding:** INR 13,70, 366
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** February 15, 2008 to February 14, 2011
9. **Project objectives:**

Isolation and purification of goat cytochrome c (g-cyt-c). Determination of amino acid sequence of g-cyt-c. Thermal denaturation and determination of thermodynamic parameters.

LiCl-induced denaturation of g-cyt-c. LiClO₄- induced denaturation of g-cyt-c.

LiBr-induced denaturation of g-cyt-c. Model building and structure analysis.

Comparisons with other mammalian

10. **A brief Overview:**

We have determined the sequence of mitochondrial cytochrome c (cyt-c) from the goat heart, and it was found to have a unique amino acid sequence among all amino acid sequences of cyt-c reported till date. Its sequence alignment with the bovine cytochrome c (b-cyt-c) led us to conclude that the goat cytochrome c (g-cyt-c) differs in amino acid sequence from b-cyt-c at only one position, i.e., Pro44(bovine) → Ala44(goat). It has been observed that guanidinium chloride (GdmCl) induces a two-state transition between the native (N) and denatured (D) states of g-cyt-c. This conclusion is reached from the coincidence of GdmCl-induced transition curves monitored by measurements of absorbance at 405, 530 and 695 nm and circular dichroism (CD) at 222, 416 and 405 nm. Analysis of denaturation curves for the Gibbs energy of stabilization suggests that the stability of g-cyt-c is, within experimental errors, identical to that of b-cyt-c. We have also measured the effect of temperature on the equilibrium, N state \leftrightarrow D state of g-cyt-c in the presence of different GdmCl concentrations. These measurements gave values of transition temperature (T_m), changes in enthalpy (ΔH_m) and heat capacity (ΔC_p) of g-cyt-c in the absence of GdmCl,

which are compared with those of b-cyt-c. We have used crystal structure coordinates of b-cyt-c to predict the structure and stability of g-cyt-c, which are compared with those of the bovine protein.

11. [Infrastructure created from the project:](#)

Biologic LP System for protein purification

12. [Project outcomes:](#)

Rahaman H, Khan MKA, Hassan MI, Islam A and Ahmad F. (2013) Evidence of non-coincidence of normalized sigmoidal curves of two different structural properties for two-state protein folding/unfolding. *The Journal of Chemical Thermodynamics*, 58: 351-358

Khan, K.A., Rahman, M.H., Hassan, M.I., Singh, T.P. and Ahmad, F. (2010), Conformational and Thermodynamic Characterization of the Premolten Globule State Occurring during Unfolding of Molten Globule State of Cytochrome-c by Lithium Chloride. *J Biol Inorg Chem* 15: 1319-1329.

Khan, K.A., Das, U., Rahman, M.H., Hassan, M. I., Srinivasan, A., Singh, B., Singh, T.P. and Ahmad, F. (2009), Disruption of a conserved residue induces molten globule in cytochrome c. *J Biol Inorg Chem*.14: 751-760.

Rahman, M.H., Khan, K.A., Hassan, M.I., Wahid, M., Singh, B., Singh, T.P., Moosavi-Movahedi, A.K. and Ahmad F (2008), Sequence and stability of the goat cytochrome c. *Biophys*

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Cloning and expression of G protein gene of group B respiratory syncytial viruses in bacterial and mammalian systems and their biophysical characterization.



3. **Project Investigator:** Dr. Shama Parveen
4. **Co-Investigator:** Dr. Shobha Broor, Inclin Trust International Okhla Industrial Area



5. **Funding Agency:** DBT
6. **Amount funding:** INR 58, 03,000.
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** 2008-2011
9. **Project objectives:**

Cloning and expression of G protein gene of prototype group B strain of RSV (18537) and characterized BA laboratory isolates in bacterial and mammalian systems by Gateway Technology.

To study the antigenic differences between the G proteins of prototype group B strain of RSV and BA viruses by quantitative ELISA and cross neutralization assay.

Study of glycosylation of G proteins expressed in mammalian system.

To determine the three dimensional structure of G protein expressed in bacterial system.

To investigate the differences in conformation and conformational stability of G proteins expressed in bacterial and mammalian systems

10. **A brief overview:**

A few investigators have reported cloning and expression of G protein gene of both group A and group B hRSV. But there is no report on cloning and expression of G protein gene of BA viruses. Therefore the present study was planned to clone and express the G protein gene of prototype group B hRSV (18357) and BA strain (281) in both prokaryotic and eukaryotic expression systems. The G protein has both N- and O-linked sugars. Therefore, the G protein expressed in mammalian cells was used to study the N- and O-linked glycosylation sites by sites directed mutagenesis (SDM) and

enzymatic de-glycosylation. In addition, the secondary structure of the G protein was determined by using circular dichroism and UV- visible spectroscopy. Further studies are needed to elucidate the complete three dimensional structure of the G protein. Determination of the structure of the G protein will have impact on vaccine development.

11. **Infrastructure created from the project:**

Bio safety hood, CO2 Incubator, Western Blotting Apparatus, Cooling Centrifuge

12. **Project outcomes:**

Ph.D. Student

Wajihul Hasan Khan:

Cloning and expression of G protein gene of group B respiratory syncytial viruses in bacterial and mammalian systems and their biophysical characterization.

A manuscript entitled “Biophysical characterization of G protein of group B respiratory syncytial virus (RSV) from bacterial system” being submitted to Protein expression and purification.

Ph.D. student presented a poster entitled “Cloning, expression and biophysical characterization of codon optimized ectodomain of G protein of group B respiratory syncytial virus (RSV) from *E.coli*” at Adelaide, South Australia, from 6-8 June 2012

13. **Benefits from the project to the society:**

Biophysical characterization of envelope protein (G protein) of RSV will have implications for vaccine development because the G protein is the vaccine candidates. Besides this large amount of proteins generated can be used for development of diagnostic assays based on Indian strains

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Centre:** Centre for Interdisciplinary Research in Basic Sciences.
2. **Project Title:** Cloning and Expression of G Protein of Respiratory Syncytial Virus (RSV) in Mammalian system and Characterization of G Protein
3. **Project Investigator:** Dr. Shama Parveen



4. **Co-Investigator:** None
5. **Funding Agency:** DST
6. **Amount funding:** INR 10,44,000
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** April 1, 2008 to March 31, 2011.
9. **Project objectives:**

Cloning of G protein gene of gp B RSV in mammalian expression system.
Expression of G protein in the mammalian system. Purification of G protein from mammalian cells. Biochemical characterization of purified G protein.
Structural characterization of G pr. by crystallization/homology modelling.
Comparison of structure of RSV G protein with the available structures of attachment proteins of other RNA viruses.
10. **A brief overview:**

The G protein of RSV was cloned and expressed in the mammalian system. The expression was confirmed by western blotting. The secondary structure of the G protein was determined by bioinformatics tools using homology modelling. The G protein is mainly α helix
11. **Infrastructure created from the project:**

Horizontal electrophoresis, vortex, microcentrifuge and pippets
12. **Project outcomes:**

A manuscript entitled "Homology modelling of the envelope G protein of human respiratory virus from India" has been submitted to BMC Bioinformatics
13. **Benefits from the project to the society:**

Biophysical characterization of envelope protein of RSV will have implications for vaccine development because G protein is the vaccine candidate. Besides this large amount of proteins generated can be used for development of diagnostic assays based on Indian strains

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Department:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Synchronization in biological systems.
3. **Project Investigator:** Dr. R. K. Brojen Singh



4. **Co-Investigator:** None.
5. **Funding Agency:** DST
6. **Amount funding:** INR 15,96,000
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** 2008-2011
9. **Project objectives:**

Study and modelling complex biological systems using deterministic and stochastic formalisms, and investigation of how these biological systems communicate among them.
10. **A brief Overview:**

We have studies various rhythmic biological systems such as genetic oscillator, circadian rhythm, calcium oscillator, p53 oscillator etc. and modelling of such complex mechanisms have been done to understand how biological systems work. Then we investigate synchronization of group of such oscillators using various coupling mechanisms to understand how biological systems do communicate among them.
11. **Infrastructure created from the project:**

One computer cluster having six nodes including UPS and one colour printer
12. **Project outcomes:**

Number of conference abstracts: 7
Number of research papers: 11
13. **Benefits from the project to the society:**

The study was to understand how do cells communicate at fundamental level and it will highlight to the complex cellular functionalities that may help to medical practitioners regarding controlling of disease control etc.
14. **Any other information you may think is important in this regard:**

Further studies on the above problems need to be done extensively using heavy computational facilities in order to investigate system level performance of biological systems.

Centre for Interdisciplinary Research in Basic Sciences

1. **Name of the Department:** Centre for Interdisciplinary Research in Basic Sciences
2. **Project Title:** Molecular basis synchronization in the dynamics of p53 protein in cancerous cells
3. **Project Investigator:** Dr. R. K. Brojen Singh



4. **Co-Investigator:** None.
5. **Funding Agency:** UGC
6. **Amount funding:** INR 6,79,000
7. **Duration of the Project:** Three Year
8. **Starting date of the Project:** 2009-2012
9. **Project objectives:**
Investigation of complex regulatory mechanism of p53 protein and modelling of stress p53 system induced by various stress inducing molecules or factors to study the spatio-temporal dynamics of the stress systems
10. **A brief Overview:**
We have modelled an MTBP-MDM2-p53 regulatory network by integrating p53-MDM2 auto regulatory model with the effect of a cellular protein MTBP (MDM2 binding protein) which is allowed to bind with MDM2. We study this model to investigate the activation of p53 and MDM2 steady state levels induced by MTBP protein under different stress conditions. Then various other stress inducing molecules such as calcium, NO, p300, HDAC1 have been incorporated to understand the complex regulatory mechanism of p53 and switching to various stress states
11. **Infrastructure created from the project:** Four workstations with 10KVA UPS
12. **Project outcomes:**
Number of research papers: 13
Number of conference abstracts: 8
13. **Benefits from the project to the society:**
The study will give some important insight how p53 controls various biological functions, origin of stress and apoptosis of cells and cancer.
14. **Any other information you may think is important in this regard:**
Further studies on the above problems need to be done extensively using heavy computational facilities in order to investigate system level performance of biological systems

Centre for Jawaharlal Nehru Studies

1. **Name of the Centre:** Centre for Jawaharlal Nehru Studies
2. **Project Title:** Analyzing Strategies for Community Participation in National Rural Health Mission: A Documentation of Action Research in Four States
3. **PI:** Dr. Archana Prasad
4. **Co-PI:** Public Health Resource Network (PHRN)
5. **Funding Agency:** ICSSR
6. **Amount funded:** INR. 7,01,975
7. **Duration of the Project:** March 1, 2010 to December 31, 2011
8. **Starting date of the Project:** March 1, 2010 to December 31, 2011
9. **Project Objectives:**

To highlight common problems in community participation in NRHM across states and districts and to analyse the local factors that impact on health delivery system through documentation and analysis of the micro studies of the community health fellows.

To document the actions and studies of community health fellows and to analyse and demonstrate potential of programmes like the community health fellowship in finding effective corrective measures in existing health delivery systems in order to build effective, equitable and responsive health system to be created in rural India through community participation.

To evaluate whether a cadre like the community health fellow can make community processes in NRHM more effective and examine the feasibility and implications of scaling up this strategy.

10. **A brief overview:**

Community participation is one of the core strategies of NRHM to achieve this goal. Community participation in NRHM

- Decentralized planning
- Hospital Management Committees with Panchayat Raj Institution at all levels,
- Untied grants to community/Panchayat Raj Institutional Bodies
- ASHA/Village Health Worker Programme
- Villages Health & Sanitation Committee
- Community monitoring processes to improve facilities and services

The introduction of these five processes was a significant improvement over earlier systems of technocratic and centralised in decision making. In the past these factors have created considerable wastage of scarce resources and have failed to deliver significant health improvements. In this context it was expected that such measures would initiate processes to democratize the health management system and make it more effective by structuring people's perceptions and needs into it. The fellowship programme of the PHRN was to aid and strengthen these processes through two

interrelated roles that they were expected to play at the district level. The first of these roles was the support that the fellow provided in terms of their actions in assisting the district health societies that had been set up by the NRHM. The second role that fellows were expected to perform was that of doing action research which fed into some of the district health planning processes. The main focus of the ICSSR project was on this second aspect of the community health fellowship programmes and its implications for a larger understanding of the impact of the processes unleashed by NRHM.

11. Infrastructure created from the project:

Books were purchased through this grant and these books are available in the library of the Centre for Jawaharlal Nehru Studies.

Author	Book
P.K Majumdar :	Fundamentals of Demography
Imrana Qadeer:	Public health and the poverty of reforms.
Ramesh wari Pandya:	Community health education.
William Easterly:	The elusive quest for growth.
Robert Beaglehode:	Public health at the cross roads.
G. Ramachandradu:	Health Planning in India.
Gerard Guthrie:	Basic research methods.
Vandana Desai(ed):	Doing development research.
UWE Flick:	An Introduction to qualitative research methods.
K.V. Ramani:	Strategic issues & challenges in health management.
Mohan Rao(ed) :	Markets and Malthus.
Mohan Rao :	From population control to reproductive health.
Rama v. Baru:	School health services in India.
J.A.Gupta:	New reproductive technologies, women's health and autonomy.
Jhansi, s.c. :	Women and reproductive health.
Vimla Nadkarni :	NGO's health and the urban poor.
Stan cox:	Sick planet.
Girish kumar :	Health sector reforms in India.
	National profile on health and Development.
	Seen but not heard: India's marginalised neglected and vulnerable children .
	Report of the Independent commission on health in India.
	State of India's health.

Ted cankester :	Setting up community health programmes.
David Werner	where there is no doctor.
	where women haven no doctor.
Amits Ray :	Medicines , medical practice and health.
N.S. Deodhar:	Evoking primary health care approach: Decentralization and panchayati Raj system .
	Poverty alleviation programmes in India.
Chronic Poverty:	A conceptual framework.
	Governance of the health sector in India
	Health status of the district of India.
	Health care and rights of patients.
Vikram Patel:	Where there is no psychiatrist.
	Pesticide usage scenario in India and viable alternatives.
Harsh Mander :	An agenda for caring.
I.Sundardraman :	Reaching health to the poor.
	Agenda for revitalization of Indian medical heritage.
	Prospective in health human power development.
Shalini Karbak :	Gender violence in India .
A.Dyalchand:	Urban health.
Javid A. Chowdhury:	Comparison of the health sector in India.
Ravi Duggal :	The private health sector in India.
Aditi Iyer:	Medical ethics for self regulation of medical profession and practice.
K.J.Nath:	Environmental sanitation and community water supply.
Mira Shiva :	Medicines, medical care and drug policy.
R.S Murthy :	Development of mental health care in India 1947-1995.
R. Srinivasan:	Regulating medicine and ethics.
Ravi Narayan :	Perspectives in medical education.
N. S. Deodhar :	Health situation in India:2001.
Amit and Ray :	The political economy of rural health care I India.
Ashish Bose :	Health and development challenges of Chhatisgarh, Jharkhand and Uttaranchal.
	Health promotion in India.
Mira Shiva :	Banned and Bannable drugs.

Alain vaguet(ed):	Indian health landscapes under globalization.
Ranjit kumar :	Research methodology.
Sudhir Anand :	Public health, ethics and equity.
Maggic Black :	water: a water of life and health.
Ann laura stoler :	Race and the education desire.
Warwick Anderson :	Colonial pathologies.
Hugher Barry:	Improving global health: patterns of potential human progress.
	India and the rights of Indigenous peoples.
N.Srinivasan:	Microfinance India.
	State of India's livelihoods report-2011
IDFC:	India Infrastructure report 2011.
Anuradha De :	A report on elementary education in India.
R. Govinda :	Who goes to school.
World Bank :	Poverty and social exclusion in India.
Nirmala Banerjee:	Mapping the field: Gender relations in contemporary india.
K.C. Sivarama krishnan:	Re-visioning Indian cities.
Waguar Ahmad :	India's new economic policy.
Sujata Patel (ed.)	Doing sociology in India.
Karin M- Polit :	Women of honour : gender and agency among dalit women.
Jaya sagade:	Child marriage in India.
Maurice Dobb:	An essays on economic growth and planning.

12. [Project Outcomes:](#)

- Five workshops were organized under this project : Research for Social Action

13. [Benefit from the Project to the Society:](#)

This project provides us with some insights into the ground realities of the relationship between local societies and public health management systems. It also shows the importance of local level action research in deepening our understanding of public health. In doing so it does a critical evaluation of the processes involved in doing socially determined research projects and their implications for public policy

Centre for West Asian Studies

1. **Name of the Centre:** Centre for West Asian Studies
2. **Project Title:** Indo-Iranian Relations in the Post Cold War Period: A (Neo) Realist Analysis
3. **PI:** Dr. Sujata Ashwarya Cheema



4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR Ministry of HRD
6. **Amount funded:** INR. 3,54,750
7. **Duration of the project:** 2 year plus 6 months ext.
8. **Starting date of the project:** March 15, 2011 to May 15, 2013
9. **Project objectives:**

In the post-Cold War period, India and Iran developed their relationship around a range of issues that served the self-interest both. A theoretical framework is required to understand why India and Iran developed close ties at this particular juncture of change in the international system, challenges to the relationship and what the future holds for both the countries. A neo (realist) perspective can tell us the directions states take in response to structural changes in the international system; they do not determine the outcomes. For this, motives of states that seek goals beyond survival such as the domestic level imperative become important, making the realist theory more 'realistic' by bridging the divide between theory and practice of foreign policy.

10. The study situates the myriad dimension of Indo-Iranian relationship, within the (neo) realist framework of analysis. Kenneth Waltz, the foremost theorist of the neo-realism, emphasizes the importance of structure of international system and its role as the primary determinant of state behaviour. Unlike traditional Realism which views states' behaviour directed by their self-interested nature, Waltz argues that structure directs their conduct. Once states are nudged in a certain direction by the structural force(s), their actions would conform to the realist grain i.e. self-interest, security and survival. The post-Cold war unipolar structure of the international system nudged India and Iran to strengthen their ties, as a balancing act against a preponderant power, and they fashioned their relationship around mutually

beneficial issues, which served their realist considerations. Here it is worth considering whether domestic level factors, such as acquisitive motives, historical ties, cultural affinities, ideology, norms and institutions and the like that states consider in foreign policy decision making played a part in fashioning their ties as it exists and whether they can be reconciled with the international and realist explanations. The aim here would be to build a premise that would enable us to make predictions about this relationship and acquire a nuanced understanding of the realist paradigm in the study of international relations

11. [Infrastructure created from the project](#): Books and Journals
12. [Project Outcomes](#): One book is published [Essays in Iran and Israel: An Indian Perspective (New Delhi: Knowledge World, 2013) and another book is under publication.
13. [Benefit from the project to the society](#): My work can be utilised in policy-making by relevant governmental agencies.
14. [Any other information you may think is important in this regards](#): None

Centre for North East Studies & Policy Research

1. **Name of the Department:** Centre for North East Studies & Policy Research
2. **Project Title:** Discrimination and Challenges before Women from North East India: Case Studies from four Metros New Delhi, Mumbai, Kolkata and Bengaluru
3. **PI:** Prof Sanjoy Hazarika, Director, Centre for the North East Studies and Policy Res.
4. **Co-PI:** Nil
5. **Funding Agency:** NCW
6. **Amount funded:** INR. 4,05,550
7. **Duration of the Project:** 9months
8. **Starting & Completion date of the Project:** March-2012 to March 2014
9. **Project Objective:**

The primary aim of this project was to document the discrimination and challenges which women from the North East Region (NER) of India face in the Metro cities across India. It seeks to place these issues in the larger context of the challenges of nation building, growth and looks at broader issues of racism and prejudice. It sought among other things, to improve the public understanding of issue related to discrimination by establishing a base of knowledge for the extent and impact of discrimination in India. By gathering evidence, the project sought to promote greater public consensus on the extent and impact of discrimination, developing a comprehensive picture of discrimination by examining the prevalence of discrimination in key areas of social and economic life and on monitoring non-discrimination to achieve other social goals.

10. **A brief overview:**

The project documents the discrimination and challenges which women from the NER face in metro cities across India. It seeks to place these issues in the larger context of the challenges of nation-building, growth and looks at broader issues of racism and prejudice. It also seeks, among other things, to improve the public understanding of issues related to discrimination by establishing a base of knowledge for the extent and impact of discrimination in India. By gathering evidence, the project aims at promoting greater public consensus on the extent and impact of discrimination, on developing a comprehensive picture of discrimination by examining the prevalence of discrimination in key areas of social and economic life and on monitoring non-discrimination to achieve other social goals. The core of the project was the field survey and detailed questionnaire that were administered to the North East women. Regarding the sample size, the "ORDER" of the National Commission for Women that authorized the Centre for North East Studies and Policy Research to conduct this project said "random sampling focusing on students and young professionals located in all four cities will be studied. The views of local media will be indicated." The project began with interviews in May 2012 and extensive discussions with a range of scholars, health professionals, police officials, heads of

NGOs and educational institutions in New Delhi, Bengaluru, Kolkata and Mumbai. The study sought:

1. To determine what forms of violence/harassment women from the North East face in public spaces in the selected cities.
2. To determine what factors play a role or contribute to creating an environment of greater safety and inclusion for women.
3. To determine how women from the North East respond to harassment and discrimination in the selected cities.
4. To see whether police were able to address the issue of prejudice often resulting in violation of rights and discrimination against the women from the North East.
5. To suggest a set of policy guidelines for the Government to deal with cases of discrimination and prejudice.
6. To suggest measures to sensitise the police on this issue; and
7. To expose the inadequacies of the system.

11. Infrastructure created from the project:

12. Project outcomes:

A workshop attended by social activists, academicians, students, media and policy makers was held at the Centre for the North East Studies and Policy Research on 23 January 2014. The event was reported extensively by the national media. The workshop's recommendation and report was used by the MP Bezbaruah Committee – 'Reports of the committee under the chairmanship of the Shri M.P. Bezbaruah to look into the concerns of the people of the North East living in other parts of the country', which was submitted to the Ministry of Home Affairs, Govt. of India. The report was quoted at length with approved policy proposed for circulation and further discussions.

13. Benefit from the project to the society:

Based on this study, the Centre for North East Studies and Policy Research make the following recommendations to the Central and State Governments.

- Amend the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989;
- Educating people in law;
- Sensitization of police on gender issues;
- More women to be appointed to police forces;
- Devise and hold workshops to educate other residents of rest of India sensitizing them about the grievances of the persons of North East;
- Identify vulnerable areas;
- Set up Women's helpline;
- Pro-active role for research institutes;
- Enhance the status and the authority of Women's Commissions;
- Training of police officials from metro cities in the North East Region;
- Register with community-based support groups;
- Training capsule for media at regional and national level;
- and Curriculum Change;
- Translation of local literature;

- Bridging cultural gaps through sports, interactive dialogue at local level, food and cultural festivals, events and get togethers; and
- Expansion of the study.

Sarojini Naidu Centre for Women's Studies

1. **Name of the Department:** Sarojini Naidu Centre for Women's Studies
2. **Project Title:** Socio-Economic Profiling of Muslim Women as an Impact of Migration in Okhla Village, New Delhi
3. **PI:** Dr. Firdous Azmat Siddiqui



4. **Co-PI:** Nil
5. **Funding Agency:** ICSSR
6. **Amount funded:** INR. 8,21,300
7. **Duration of the Project:** 2yr
8. **Starting & completion date of the Project:** March-2012 to Dec-2014
9. **Project objectives:**
 1. To study the socio-economic conditions of Muslims in general and women in particular.
 2. To study the Demographic changes of Okhla.
 3. To study Muslim's access to education, health service, municipal infrastructure, bank credit, other services provided by government / public sector entities.
 4. To study the impact of migration on the lives of women and to study citizenship issue amongst migrated people.
 5. To study the identity issue amongst minority group and its impact on women as well as consciousness level amongst Muslim women.
 6. To study the impact of communal violence and issue of communal harmony with other community
 7. To study the government policies regarding minority and its access to women.
10. **A brief overview:--**
11. **Infrastructure created from the project:**

Project has obtained books of valuing Rs. 40,000 focussing on Migration and Muslim issues.
12. **Project outcomes:**

Project is about to submit. As outcome of the Project is concerned, I intended to submit full fresh data to **Funding Agency** by which reason I have not used its data, though during our field visit I personally visited to some target group, as migrants coming from conflict zone and done two paper one is published on the topic of 'Gendering Migration: Kashmiri Girls Speaking on Right to Life and Education, IOSR Journal, 2013'. Another detail Paper is being communicated by 'Violence and

Gender' published from Marry Ann Liebert, on 'Gendering Migration: Assam Muslim Women Speaking on Peace'

13. **Benefit from the project to the society:** 1. Migration study from minority

Perspective is one of the most neglected areas what this project tried to explore. 2. Okhla has seen a high migration in recent two decades that has transformed its demography completely therefore it was very interesting to study migrant's issues in fast changing Globalized world. 3. Issue of Government Scheme and its impact on minority has been searched in detail account. 4. Muslim Ghettoization issue was also one of the major issue this project has focussed. 5. This project has collected a vast data related to Muslims socio-economic and cultural profile that can be used for any policy making process as what are issues among Muslims.

14. **Any other information you may think is important in this regard:**

This project has covered almost 2000 household taking as 1400 questionnaire and almost 600 output from focus Group Discussion, In-depth Interview and outcome came from small workshop with Domestic workers and students which is very significant data for empirical study, why Muslims are prone to move? Why migration from UP, Bihar and Assam is more in Okhla Village. What are the socio-economic dimensions of migration? These are key issues on which whole discourse has been taken.

Muslim constitute almost 14% of the Indian population (approximately 73% of the Minority population according to the 2001 Census report) and comprise the largest minority groups. It is a well known fact that the socio-economic condition of North Indian Muslim has often been poor because of educational and economic deficit. The Gopal Singh report (1982-3) pointed out that the condition of Minorities (Muslims) was amongst the poorest of the poor and had slipped even below the Dalits. The 2006 Sachar Committee report reiterated the condition of Muslims being below the Dalits in government jobs, poverty line and literacy level. The myriad Government of India and NGO reports suggest affirmative action. The communal violence incidents that have taken place across the country. It was found that after 1992 ghettoization has increased more amongst Muslims and has lead to migration from (communally segregated village and town to Muslim majority area) to a large scale. It is in this context that this project is trying to examine how this phenomenon has impacted lives of Muslims and women in particular. The coverage area is the Okhla village area which has recently seen large scale migration of huge chunks of the Muslim community.

Universe and Sampling: The residents are identified by dividing the whole Okhla village into four geographical division as Batla house and Zakir Nagar, Okhla Village (main market) and Nai Basti, Abul Fazal into two phases; each phase enclose four lanes as known as street or thokkar No. 1, 2, 3, 4, 5, 6, 7, 8, and Okhla Vihar (Noor Nagar, Jowhery Farm and Okhla Vihar). Largely Okhla village witness migration from UP, Bihar, Kashmir, Haryana, Bengal and other North East State.

Methodology: The study has used both qualitative and quantitative methods in data collection and analysis. Also it has taken into account the secondary sources (Official Government Data, Reports, Literature review) as well as empirical data collected

through various research instruments. Almost 2000 household has been covered out of which 1400 questionnaire based and other 600 are semi structured interview schedule and dragged from focus group discussion.

1. Observation sheet
2. Focus group discussion
3. Questionnaire
4. Literature review

Framework of Analysis

The data has been compiled at the area level. The data collected from primary sources is used to assess for women the:

1. Cause of migration and status post migration
2. Effect of migration on women as compared to men in their own community and others
3. Opportunities and experience of men and women in skill development
4. Working and living conditions, security and safety and support issues.
5. Access to service delivery system and related issues
6. Assets owned and managed by women and men to increase their skill base and security
7. Women's access to training, transport, public infrastructure and water resources
8. Housing, drinking water and other basic amenities
9. Maternity, childbirth, child care and health care
10. Access to government programmes, minority commission in terms of creating livelihoods provision.