

# PROFILE

## Advanced Electronic and Nano-Materials Laboratory Sponsored by



### Dr. Arun Singh

#### Current Position

#### Assistant Professor of Physics

Department of Physics,

Jamia Millia Islamia, (a Central University), New Delhi-110025. (INDIA)

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#### Objective

To render best of my services in the field of specialization however challenging it may be and to learn something from it. The primary research interest is in thin film Technology, functional oxides, multiferroics, nanoelectronics and related devices. The long-term interests include scientific research, management, and academics, start an industry to serve the society. I have keen interest in fabrication & characterization of functional materials and their application especially in MEMS & NEMS based devices.

#### Specialization and Field of interest

Thin film technology, Electro-ceramics, Pulsed Laser Deposition, RF Sputtering, Sol-gel, Solid State Fabrication Techniques, Processing & characterization of Ferroelectrics, Dielectrics, Multiferroics - Multifunctional Multi-component oxide thin films & bulk materials. Transducer and non-volatile memory device applications, Ferroelectrics-semiconductor interface physics, gas sensors.

#### Educational Qualification

Examination	Subjects	University / Board
B. Sc	Physics, Chem. Maths	Rewa University, India
M.Sc. (Physics)	Physics (Electronics)	Rewa University, India
Ph. D. (Physics)	Materials Science	University of Delhi, India

Ph. D. work had been pursued under the supervision of **Prof. K. Sreenivas** and **Prof. Vinay Gupta** at

“Electronic Materials and thin films Device Laboratory” at the Department of Physics and Astrophysics. The EMDL research group is internationally recognized for the work on electronic transport phenomenon of multifunctional metal oxide ferroelectric, piezoelectric and sensor materials.

## Employment Summary

Position Held	Employer Institute/place ofwork	Area / Nature of Work
Assistant Professor	Department of Physics, Jamia Millia Islamia, New Delhi-110025	Teaching of M.Sc. and BSc (HPI) & research.
Visiting Faculty	Department of Physics, University of Puerto Rico, San, Juan, PR 00931-3343, USA	Research work
Assistant Professor	Department of Physics and Electronics Hans Raj College, University of Delhi, Delhi, 110007(Ad-hoc)	Teaching of BSc (H) & research.
Post-Doctoral Fellow	Electronic Materials Device Laboratory, Department of Physics & Astrophysics, University of Delhi, Delhi, 110007	Research work
Research Associate	Department of Physics & Astrophysics, University of Delhi, Delhi, 110007	Research & Teaching of M.Sc. semesters

### Experience: Teaching-19 years, Research-22 Years

- Worked as Research Scholar in the Department of Physics & Astrophysics, University of Delhi, Delhi – 110 007.
- Worked as scholar with Prof. P. K. Srivastava, APS University, Rewa.

## Honours and Awards Received

- **Visiting Faculty** at University of Puerto Rico, San Juan, PR 00931-3343, USA.
- Recipient of **BOYSCAST Fellow** (“Better Opportunity for Young Scientists in Chosen Areas in Science and Technology”) Fellowship of **Ministry of science and Technology, Govt. of India.**  
(Worked on Fabrication and characterization of thin films of multifunctional multiferroic materials for Magneto-electric, FRAM and Photovoltaic applications at the SPECLAB, Department of Physics, University of Puerto Rico, San Juan, USA)
- Recipient of **Fast Track-Young Scientist RP of Ministry of science and Technology. Govt. of India.**
- Recipient of **Research Associate-Ship at University of Delhi, from UGC-MHRD, Govt. of India.**
- **Cited among the world’s top 2% scientist:**  
Stanford University and its scientist, being evaluated, acknowledged and adjudged by researchers, internationally, for encouragement as **citing among the world’s top 2% scientist list of the year 2020.** The list has been published in the globally renowned journal PLOS Biology. The list is recognized our team research work from the Department of Physics, JMI.

## Reviewer for Journals

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1. Nano Energy, *Elsevier* (I.F.-19.069)
2. J. Alloys & Compounds, *Elsevier* (I.F. – 6.371)
3. Materials Science and Engineering B, *Elsevier* (I.F. - 3.407)
4. IEEE Access, *IEEE* (I.F.- 3.367)
5. ACS Applied Electronic Materials, *ACS* (I.F.- 8.000)
6. Ceramics International, *Elsevier* (I.F.- 5.532)
7. J. Phys. & Chem. of solids, *Elsevier* (I.F. - 4.383)
8. Optical Materials, *Elsevier* (I.F.- 3.754)
9. Journal of Asian Ceramic Societies, *Taylor & Francis* (I.F.-3.125)
10. Super lattice & Microstructures, *Elsevier* (I.F.-2.385)
11. Thin Solid Films, *Elsevier* (I.F. - 2.358)
12. Sensor Letters, *American Scientific Publisher, USA* (I.F.-3.04)
13. Indian Journal of pure and applied Physics, *CSIR NISCAIR* (I.F.-0.846)
14. Journal of Optoelectronic and Advanced Materials, *INOE Publishing House*, (I.F.-0.58)
15. Indian Journal of Chemical Technology, *CSIR NISCAIR* (I.F.-0.76)

## Member in Technical Committees/ Organizations

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- Member, Committee for Scientific & Technology Terminology of Commission for Scientific & Technology Terminology, MHRD, Govt. of India (2007)
- Advisor, Federation of NGOs, New Delhi.

## Membership of Academic Professional Societies:

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1. Member of the Materials Research Society, MRS, Boston, USA.
2. Member of the Electro chemical Society, ECS, Pennington, NJ, USA.
3. The Indian Science Congress Association, Kolkata, India.
4. Life Member of “Ultrasonic Society of India” New Delhi, India.
5. Life Member of “Materials Research society of India” Bangalore, India.
6. Life Member of “The Indian Physical Society”, Kolkata, India.
7. Member of Indian Association of Physics Teachers (IAPT), Kanpur, India.
8. Member of Indian Association for Canadian Studies, New Delhi, India.

## Countries/Institutions Visited

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- **Germany** ‘Kiel University of Applied Science,’ Kiel, **Germany** Presented a research paper in “2<sup>nd</sup> International conference on Smart Materials and Structures” (2007).
- **Austria**, at ‘University of Vienna’, Vienna, **Austria** (2007).
- **USA**, to executed “BOYSCAST fellowship” for a year (2010-11) awarded by the Department of science and Technology, Govt. of India.

## Conferences /Organized Seminars (Conducted)

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- Member, Local organizing committee, **National Conference on Advanced Functional Materials-2019 (NCAFM-2019)** held at Jamia Millia Islamia, New Delhi, India, 20-21 November 2019.
- Member, Local organizing committee, **International Conference on Power Electronics, Control & Automation (ICPECA-1019)** organized by Department of Electrical Engineering, Faculty of Engineering & Technology held at Jamia Millia Islamia, New Delhi-25, India, 16-17 Nov. 2019.
- Served as Examiner for poster presentations in **National Science Day 2018**, at INSA, New Delhi, held on 28 Feb. 2018.
- Chaired, a Debate session in **National Science Day 2018**, at INSA, New Delhi, held on 28 Feb. 2018.
- Member, Hospitality Committee of Annual Convocation, JMI, 16<sup>th</sup> April 2017.
- Attended three weeks (20 February -14 March 2017) **Refresher Course in Climate Change**



**(Interdisciplinary)** at Academic Staff College, Jamia Millia Islamia, New Delhi-110025.

- Member, Hospitality Committee of Annual Convocation, JMI, 11<sup>th</sup> Nov. 2016.
- Served as Examiner for poster presentations in **International Conference on Technologically Advanced materials and Asian Meeting on ferroelectricity (ICTAM-AMF 10)** during 07-11 Nov. 2016 at University of Delhi.
- Attended three weeks (7-28 January 2013) **Refresher Course on Environmental Studies Interdisciplinary**, at Centre for Professional Development in Higher Education, University of Delhi, Delhi-110 007.
- Attended four weeks (10 Oct-09 Nov. 2012) **Orientation Programme**, at Academic Staff College, Jamia Millia Islamia, Delhi-110025.
- Chaired, a technical session in **National Symposium on Nanotechnology: Interdisciplinary Aspects**, at YMCA University of Science and technology, Faridabad, held on Dec. 12, 2012.
- Member, Technical Committee, **National Symposium on Nanotechnology: Interdisciplinary Aspects**, held at YMCA University of science & Technology, Faridabad, 12<sup>th</sup> Dec. 2012.
- Member, Technical Committee, **National Workshop on Nanotechnology and Embedded system**, held at YMCA University of science & Technology, Faridabad, 23<sup>th</sup> July to 3<sup>rd</sup> August 2012,
- Member, Local Organizing Committee of **“International Workshop on Physics of Semiconductor Devices”** held at Jamia Millia Islamia. December 14-18, 2009.
- Member, Hospitality Committee of Annual Convocation, JMI, 30<sup>th</sup> Oct. 2009
- Member, Local organizing committee of **“Indo-Australia Symposium on Multifunctional Nanomaterials, Nanostructures and Applications (MNNA 2007)”** held at the Department of Physics & Astrophysics, University of Delhi, Delhi, on **December 19- 21 2007**.
- Member, Local Organizing Committee of National seminar on **“Multifunctional Nanomaterials, Nanostructures and Applications (MNNA 2006)”** held at the Department of Physics & Astrophysics, University of Delhi, Delhi, **2006**.
- Member, Local Organizing Committee of **XIII<sup>th</sup> National seminar on Ferroelectrics and dielectrics**, held on 23<sup>rd</sup> to 25<sup>th</sup> November 2004 at Department of Physics & Astrophysics, University of Delhi.
- Organized a one-day **National Seminar on the “Indo-Canadian Partnership and Globalization: Trends and Perspective”** at the Constitution Club, New Delhi on 10<sup>th</sup> March 2005. In association with Canadian High Commission and Central bank
- Organized a **University seminar on “Educational challenges for the youth”** 31<sup>st</sup> March 2003 at University of Delhi, Delhi.

### Corporate Contributions

1. **Member, Board of Studies, Department of Physics, JMI (2008 to till date)**
2. **Assistant Superintendent, JMI B. Tech Entrance Test (2010)**
3. **Member UG Lab Committee, Department of Physics, JMI, 2010.**
4. **Co-In charge, B.Sc. I year, Semester Examinations, Department of Physics, JMI, 2012.**
5. **Co- Coordinator, Smart Class, Department of Physics, JMI, 2013.**
6. **Attendance advisor B.Sc. (H) Physics Sem. 2014**
7. **Member UG Lab Committee, Department of Physics, JMI, 2018.**
8. **Member, Safety Management committee, Department of Physics, JMI, 2018.**

### Courses/Syllabus framed

- Re-structured the B.Sc. Syllabi, Department of Physics, JMI (2012)
- Re-structured the B.Sc. Syllabi, Department of Physics, JMI (2014)
- Re-structured the B.Sc. Syllabi, Department of Physics, JMI (2015)
- Re-structured the M.Sc. Syllabi, Department of Physics, JMI (2015)
- Re-structured the B.Sc. Syllabi, Department of Physics, JMI (2018)
- Re-structured the M.Sc. Syllabi, Department of Physics, JMI (2018)

## Courses/Subjects taught

### Undergraduate Subjects:

- Solid State Physics
- Waves & Oscillation
- Optics
- Basic Electronics
- Electronics
- Structure of Matter
- Thermal Physics
- Mechanics
- Laboratory courses

### Postgraduate Subjects:

- M. Sc. Final Electronics practical
- M. Sc. Previous Wave & Optics practical
- M. Sc. Final Nuclear Physics Practical
- M. Sc. Final Electronics practical
- Growth and Imperfection
- Solid State Physics
- Physics of Novel Materials
- Tutorials
- Laboratory courses

## RESEARCH & DEVELOPMENT LAB

### Advanced Electronic and Nano-Materials Research Laboratory

#### Scientific & Technological projects, Ongoing/Completed

Sl. No	Project Title	Position Held	Year of start	Year of Completion Tentatively	Cost (Rs. in lakhs)	Funding Agency
1	Fabrication of piezoelectric and pyroelectric ceramics and thin films for transducers application	Principal Investigator	2009	2014	19,44,000	Department of Science and Technology, Govt. of India
2	Development and characterization of ferroelectric thin films and ceramics for device applications	Principal Investigator	2009	2014	12,00,400	University Grants Commission Govt. of India
3	Development of Novel Room Temperature Magneto electric Multiferroics Materials for Multifunctional device applications	BOYSCAST FELLOW	2010	2011	-----	Department of Science and Technology, Govt. of India

### Area of Research

#### Material Science

Fabrication and characterization of electronic materials as Ferroelectrics, Piezoelectric, Pyroelectric, Multiferroic thin films & ceramics of Multicomponent Functional Oxides and Nanomaterials, Energy harvesting-solar cell Photovoltaic materials- oxides and dye sensitised solar cell, Carbon Materials- Graphene Oxide, Functional Carbon nanotubes -DBSAPANI-Gas Sensors, which are widely used for non-volatile random access memory, IR sensors, actuators, transducers, ultrasonics, Renewable Energy, electronics and identification of hazardous gases. The main focused materials are PZT, PLZT, PNIzT, PFeZT, PT, PCT, CdS-CdTe, BFO, ZnO, Functional Carbon Nanotubes -DBSA-PANI, Lead Sulphide assembled Titanium Dioxide.

- |                              |                    |                     |
|------------------------------|--------------------|---------------------|
| ➤ Materials Characterization | ➤ Nanomaterials    | ➤ Ferroelectric     |
| ➤ Thin Films/Ceramics        | ➤ Photovoltaic     | ➤ Piezoelectric     |
| ➤ Composites                 | ➤ Carbon Materials | ➤ Energy harvesting |

## Specialization and Field of interest

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Thin film technology, Electro-ceramics, Pulsed Laser Deposition, RF Sputtering, Sol-gel, Solid State Fabrication Techniques, Processing & characterization of Ferroelectrics, Dielectrics, Multiferroics - Multifunctional Multicomponent oxide thin films & bulk materials. Transducer and non-volatile memory device applications Ferroelectrics-semiconductor interface physics, gas sensors.

### Research at the Laboratory

Currently laboratory development is under progress, some of the equipments have been purchased and installed with financial assistance received from funding agencies. The Thin films and ceramics samples are being fabricated by Sol-gel and Solid-state reaction, combustion Methods. Other sophisticated depositions -PLD, Sputtering are being done under collaboration from DU, CSIR-NPL, SPECLAB–USA, Portugal, South Korea, and Saudi Arabia.

The Thin films and ceramic samples of different multifunctional metal oxide, multiferroic materials have been characterized using XRD, SEM, UV-Vis Spectrophotometer, Impedance Analyzer, Electrometer for Ferroelectric, non-volatile FRAM, piezoelectric, Magneto-electric, Photovoltaic solar cell and sensor applications.

### Expertise in Synthesis / Characterization Techniques

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#### I. Synthesis of ceramics /nanoparticles /nanocomposites/thin film

1. Thin film deposition by Pulsed Laser Deposition
2. Thin film deposition by RF Sputtering
3. Thin film deposition by DC Sputtering
4. Sol-gel process
5. Solution Intercalation
6. Melt Intercalation
7. Thin film deposition by thermal evaporation technique
8. Thin film deposition by Spin coating technique
9. Thin film deposition by Dip coating technique
10. Synthesis of materials by chemical reaction
11. Synthesis of material by using melts method
12. Deposition of Pt/Ti electrodes on ceramic samples and substrates.
13. Preparation of Electro-ceramics using conventional solid state processing route
14. Fabrication of various patterns using the photolithography technique for miniaturization of Devices

#### II. Characterization Techniques

- |                                           |                                        |
|-------------------------------------------|----------------------------------------|
| 1. Powder X-ray diffractometer analysis.  | 7. Scanning electron microscopy (SEM). |
| 2. UV-VIS-NIR spectrophotometer analysis. | 8. Impedance analysis.                 |
| 3. Microscope                             | 9. I-V characteristic analysis.        |
| 4. Photoluminescence (PL) analysis.       | 10. Supercapacitor.                    |
| 5. FT-Raman spectroscopy analysis.        | 11. Gas sensing.                       |
| 6. FT-IR spectroscopy analysis.           |                                        |



## Collaborations National / International

1. **Professor Ram S Katiyar, Spec lab**, University of Puerto Rico, San Juan, **USA**.
2. **Professor Yogendra K. Mishra**, Mads Clausen Institute, University of Southern Denmark, **Denmark**
3. **Professor Paula Maria Vilarinho**, Department of Ceramics and Glass Engineering, University of Aveiro, Aveiro, **Portugal**.
4. **Professor Ashok Kumar, FAAAS, FASM**, Director, Nanotechnology Research and Education, Center Professor, Department of Mechanical Engineering and Clean Energy Research Center University of South Florida, Tampa, FL 33620-5350; **USA**.
5. **Professor K. Sreenivas**, Department of Physics and Astrophysics, University of Delhi, Delhi -110 007
6. **Professor Vinay Gupta**, Department of Physics and Astrophysics, University of Delhi, Delhi -110 007
7. **Dr. S. P. Singh**, Sr. Scientist, CSIR-National Physical Laboratory, New Delhi.
8. **Professor Uma Thanganathan**, Research Core for Interdisciplinary Sciences (RCIS) Okayama University, Tsushima-Naka, Okayama, **Japan**.
9. **Dr. Amit Sanger**, Post-Doctoral Research Associate, School of Materials Science, Ulsan National Institute of Science and Technology, Ulsan-44919, **South Korea**.
10. **Dr. Mohd. Shkir**, Assistant Professor, Department of Physics, College of Science, King Khalid University, Abha 61413, P.O. Box 9004, **Saudi Arabia**.
11. **Concord Electro-Ceramic Industries**, New Delhi- for preparation of high piezoelectric ceramics for sensors and transducers applications.

## Research Guidance (Supervised/Ongoing)

### Supervised

1. Dr. Amit Saxena, UGC-DS Kothari Post Doctoral Fellow (2010)
2. Dr. Ziaul Raza Khan Associated as Post Doctoral Fellow (2012)
3. Mr. Shushil Kumar - M. Phil (2008)
4. Mr. Mohammed Arif\* –M. Phil (2013)
5. MS/PG Dissertations Supervised: 30 (Thirty)

### Ph. D. Degree awarded/Submitted# Under Supervision: 03

1. Jitender Kumar : "Nano-structured conducting polymers and their applications"
2. Nitu Kumari\* : "Doped PZT ceramics and thin films and its applications"
3. Mridula Kumari\* : "Study of La modified Lead Zirconate titanate ceramics & thin films"
4. Mohd. Arif# : "Development of Metal Oxide Nanostructure Thin films for Sensor Applications".
5. Stuti Singh\*#: "Synthesis and Characterization of II-VI group Metal Oxide".

### Currently Under Supervision for Ph. D. Degree: 02

1. Shagun Monga: "Nanostructured Ferroelectric Thin Films: Growth and Characterizations".
2. Neeraj Sharma: "Synthesis and characterization of Carbon Materials and its applications".
3. ....
4. ....

\*Act as Co-supervisor

## Visitors Invited for Talk

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1. **Professor Paula Maria Vilarinho**  
Department of Ceramics and Glass Engineering,  
Centre for Research in Ceramics and Composites (CICECO),  
University of Aveiro, Portugal, November 09, 2016.
2. **Professor R S Katiyar, Speclab,**  
Department of Physics, University of Puerto Rico, San  
Juan, PR 00931-3343, USA, Dec. 5, 2012.
3. **Professor Paula Maria Vilarinho**  
Department of Ceramics and Glass Engineering,  
Centre for Research in Ceramics and Composites (CICECO),  
University of Aveiro, Portugal, March 15, 2012.
4. **Professor Ashok Kumar**  
Director, Nanotechnology Research & Education Center (NREC),  
USA; March 19, 2012.
5. **Professor Uma Thanganathan**  
Research Core for Interdisciplinary Sciences (RCIS) Okayama  
University, Tsushima-Naka, Okayama, Japan, April 20, 2012
6. **Professor Vinay Gupta**  
Department of Physics and Astrophysics University of  
Delhi, Delhi -110 007, Oct. 09, 2009

## Invited Talk / Oral Presentation in Conferences

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### National Conferences

1. Presented a research paper titled "Persistence of ferroelectric pseudo cubic structure of  $\text{Pb}_{0.55}\text{Ca}_{0.45}\text{TiO}_3$ ", **Arun Singh**, K. Sreenivas, R. S. Katiyar and Vinay Gupta, Proc. of "2<sup>nd</sup> International conference on Smart Materials and Structures" at University of Applied Science Kiel, Kiel, Germany, P.108 (2007) supported by CSIR New Delhi.
2. "Growth and characterization of multiferroic  $\text{BiFeO}_3$  thin films prepared by Pulse Laser Deposition", **Arun Singh**, V Gupta, R S Katiyar, Presented in International conference on Nanomaterials and Nanotechnology, ICNANO, New Delhi India-18-21 Dec. (2011)
3. Topic "Studies on photovoltaic properties of nanocrystalline thin films" **Arun Singh**, Mohd. Arif
4. R. Khan, R S Katiyar, delivered at "National Workshop on Nanotechnology and Embedded system", held at YMCA University of science & Technology, Faridabad, July 23- August 3, 2012
5. Presented a research paper titled "Dielectric spectroscopy of PANI-DBSA nano-composite film in the absence and presence of  $\text{NH}_3$  gas". Jitender Kumar., S. P. Singh, and Arun Singh National Conference/Workshop on Synthesis, Characterisation, & Application of Advanced Nanomaterials (NCSCAAN-2014), 17-19th Jan. 2014. Organized by Hindustan College of Science & Technology, Farah, Mathura, UP.

### International Conferences (Abroad)

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5. "Optical and Dielectric Studies on Multiferroic BFO Thin Films Prepared by PLD", **Arun Singh**, R. Katiyar, and R.S. Katiyar Presented at 220th International Conference of Electro Chemical Society (ECS) Meeting at Boston, MA, October 9 - October 14 (2011) supported by DOE-USA.
6. Photovoltaic properties in ferroelectric thin films prepared by PLD, R. K. Katiyar, **Arun Singh**, S.Sahoo, G. Morell, R. S. Katiyar, Presented at 43rd International Conference of IUPAC at San Juan, Puerto Rico, USA, August 2-7, 2011.
7. Photovoltaic Studies on Multiferroic Thin Films Prepared by PLD, **Arun Singh**, Satyaprakash Sahoo, R.S. Katiyar, presented in international conference MRS fall meeting at Boston Nov.27- Dec.02.2011. Supported by DOE-USA.
8. Phonon assignments in multiferroic  $\text{BiFeO}_3$  single crystal, **Arun Singh**, Satyaprakash Sahoo, R Palai, R S Katiyar, Presented in international conference MRS fall meeting at Boston Nov.27- Dec.02.2011, supported by DOE-USA.
9. NiO Nanoparticle Sensitive for Chlorine Gas Sensor, **Arun Singh**, oral presentation 1st International Congress On Natural Sciences (ICNAS-2021) 10-12 September 2021 Atatürk University, ERZURUM, TURKEY



## PUBLICATIONS

### (a) Book reviewed:

**Entitled: "An Introduction to Operational amplifiers" by MACMILLAN Ltd.**

### (b) Book Chapters:

1. **Arun Singh\*** "A review of graphene oxide (GO): Synthesis, Properties and Recent Developments" 2D Materials, (**IntechOpen ISBN 978-953-51-7863-7**). (2019)
2. Mohd. Arif, A. Sanger, **Arun Singh\***, "Chromium nitride thin electrodes for super capacitor applications", Science, Technology and Advanced Applications of Super capacitors, (**IntechOpen, ISBN 978-953-51-7034-1**). (2019)
3. Mohan Pal, **Arun Singh\***, "Sustainable and Renewable Energy from DSSC - A Facile Method and Cost-Effective Materials", Environmental Technology, (Daya Publication House, division of Astral International Pvt. Ltd., New Delhi-110 002, **ISBN 978-81-7035-823-7**). (2014)

### (c) Papers in refereed journals

- 1) "TG-DTA and FTIR studies on sol-gel derived  $\text{Pb}_{1-x}\text{Ca}_x\text{TiO}_3$ ", **Arun Singh** and K. Sreenivas, **Ferroelectrics**, **324**, (2005) **77-81** (*I.F.* - **0.697**).
- 2) "Piezoelectric properties of nonstoichiometric  $\text{Sr}_{1-x}\text{Bi}_{2+2x/3}\text{Ta}_2\text{O}_9$  ceramics", Rajni Jain, **Arun Singh**, Vinay Gupta, and K. Sreenivas, **J. Appl. Physics**, **97**, (2005) **124101** (*I.F.* - **2.877**).
- 3) "Dielectric and piezoelectric properties of Sol-gel derived Ca doped  $\text{PbTiO}_3$ ", **Arun Singh**, Vinay Gupta, and K. Sreenivas, **Mater. Sc. Eng. B**, **130**, (2006) **81-88** (*I.F.* - **3.407**).
- 4) "Influence of Ca additive on the optical and dielectric studies of Sol-gel derived  $\text{PbTiO}_3$  ceramics", **Arun Singh**, Vinay Gupta and K. Sreenivas, **J. Physics chemistry of solids**, **68** (2007) **119** (*I.F.* - **4.383**).
- 5) "Evidence of pseudo cubic structure in Sol-gel derived  $\text{Pb}_{1-x}\text{Ca}_x\text{TiO}_3$  ( $x=0.35 - 0.48$ ) ceramic by dielectric and Raman Spectroscopy", **Arun Singh**, K. Sreenivas, R. S. Katiyar and Vinay Gupta, **J. Appl. Physics**, **102**, (2007) **074110** (*I.F.* - **2.877**).
- 6) "Studies of photovoltaic properties of nanocrystalline thin films of CdS - CdTe", R.K. Katiyar, Satyaprakash Sahoo, A.P.S. Gaur, **Arun Singh**, G. Morell, R.S. Katiyar, **Journal of Alloys and Compounds**, **509** (41), pg. 10003-10006 (*I.F.* - **6.371**).
- 7) "Development and study of the structural and optical properties of hexagonal ZnO nanocrystals", Ziaul Raza Khan, Mohd. Arif and **Arun Singh\***, 2012, 2:22, **International Nano Letters**.
- 8) "Preparation and Structural characterization of  $\text{Pb}(\text{Zr}_{0.52}\text{Ti}_{0.48})\text{O}_3$  ceramics from solid state reaction method" Nittu Kumari, **Arun Singh** and Jagdhar Mandal, **International Refereed Journal of Engineering and Science (IRJES)** Volume 2, Issue 10 (October 2013), PP. 48-50. (*I.F.* - **2.31**).
- 9) "Lead Zirconate Titanate Piezoelectric Ceramics with Nickel Oxide Additions" Nittu Kumari, **Arun Singh** and Jagdhar Mandal, **International Refereed Journal of Engineering and Science (IRJES)** Volume 2, Issue 10 (October 2013), PP. 51-55. (*I.F.* - **2.31**).
- 10) "Highly sensitive chemo-resistive ammonia sensor based dodecyl benzene sulfonic acid doped polyaniline thin film" Jitender Kumar, Md Shahab Uddin, **Arun Singh**, S. P. Singh, Praveen Saini, S.K. Dhawan and Vinay Gupta, **Science of Advanced Materials**, Vol.6, pp1-8, 2014. (*I.F.* - **1.158**).

- 11) "Effect of substrate temperature on structural and optical properties of thermally evaporated CdS nanocrystalline thin films." Mohd. Arif, Siddhartha Ziaul Raza Khan, Vinay Gupta and **Arun Singh\***, **Indian journal of Pure and Appl. physics**, Vol. 52, 2014 pp699-703, (*I.F.* - **0.846**).
- 12) "Influence of thickness on optical and structural properties of BiFeO<sub>3</sub> thin films: PLD grown" **Arun Singh\***, Ziaul Raza Khan, Paula Vilarinho, Vinay Gupta, R S Katiyar, **Materials Research Bulletin**, 49 (2014) 531–536, (*I.F.* **5.6**).
- 13) "Structural and Dielectric properties of PZT Ceramics Prepared by Solid State Reaction Route", Mridula Kumari, **Arun Singh** and Jagdhar Mandal, **International Journal of Scientific & Engineering research**, Vol. 5, Issue 4, (2014) pp.404-406 (*I.F.* – **4.2**).
- 14) "Preparation and Characterization of La<sup>3+</sup> Modified PZT Ceramics", Mridula Kumari, **Arun Singh** and Jagdhar Mandal, **International Journal of Materials Science and Manufacturing Engineering**, Vol. 41, Issue 1, (2014) pp.1137-39 **2315-4527 (Print)**.
- 15) "Advances in Photovoltaic Behavior of Ferroelectric BiFeO<sub>3</sub>", Kirtika Sharma, **Arun Singh\***, **Journal of Nanoscience and Technology**, 2(2) (2016) pp.85-90 ISSN: **2455-0191**.
- 16) "Progress in the Growth and Characterization of Nano-Structural Bismuth Ferrite Thin Films", Kirtika Sharma, **Arun Singh\***, **Journal of Advanced Chemical Sciences**, 2(2) (2016) pp.241-245 ISSN: **2394-5311**.
- 17) "Higher oxidation level in graphene oxide", Vaishali Gupta, Neeraj Sharma, U. Singh, Mohd. Arif, and **Arun Singh\***, **Optik, International Journal for Light and Electron Optics**, 143 (2017) pp.115 124. (*I.F.* - **2.84**).
- 18) "Sputter deposited chromium nitride thin electrodes for super capacitor applications" Mohd. Arif, Amit Sanger, and **Arun Singh\***, **Materials Letters**, 230 (2018) 213-217, (*I.F.* - **3.574**).
- 19) "Highly Sensitive NiO nanoparticles-based Chlorine gas sensor", Mohd. Arif, Amit Sanger and **Arun Singh\***, **Journal of Electronic Materials**, Vol. 47, No. 7, 3451-3458 (2018) (*I.F.* – **2.047**).
- 20) "Annealing Temperatures Effect on Structural and Optical Properties of Sol-gel derived ZnO Thin Films", Mohd.Arif, Amit Sanger, Paula M. Vilarinho and Arun Singh\*, **Journal of Electronic Materials**, Vol. 47, No. 7, 3678-3683, (2018) (*I.F.* – **2.047**).
- 21) "Investigation of structural, optical and vibrational properties of highly oriented ZnO thin film", Mohd.Arif, Shagun Monga, Amit Sanger, Paula M. Vilarinho and **Arun Singh\***, **Vacuum** 155 (2018) 662–666 (*I.F.* – **4.11**).
- 22) "Investigation on structural, linear and nonlinear optical properties of sol-gel derived nanocrystalline Mg doped ZnO thin films for optoelectronic applications", Mohd. Shkir, Mohd. Arif, V. Ganesh, M. A. Manthrammel, **Arun Singh**, I.S. Yahia, P.S. Patil, Shivaraj R. Maidur, S. AlFaify, **Journal of Molecular Structure**, 1173 (2018) 375 384 (*I.F.* – **3.841**).
- 23) "Linear, third order nonlinear and optical limiting studies on MZO/FTO thin films system fabricated by spin coating technique for electro-optic applications", Mohd. Shkir, Mohd. Arif, V. Ganesh, M. A. Manthrammel, **Arun Singh**, Shivaraj R Maidur, P.S. Patil, I.S. Yahia, H. Algarni, S. AlFaify, **Journal of Materials Research**, pp. 1-10, (2018) (*I.F.* - **2.909**).
- 24) "Structural, morphological, optical and third order nonlinear optical response of spin-coated NiO thin films: An effect of N doping", V. Ganesh, L. Haritha, Mohd. Anis, Mohd. Shkir, I.S Yahia, **Arun Singh**, S. AlFaify, **Solid State Sciences** 86 (2018) 98-106 (*I.F.* – **3.753**).
- 25) "Influence of interparticle interaction on the structural, optical and magnetic properties of NiO nanoparticles", Mohd. Arif, Amit Sanger, **Arun Singh\***, R. S. Katiyar, **Physica B: Condensed Matter** 552 (2019) 88–95 (*I.F.* – **2.988**).
- 26) "Linear and nonlinear optical investigations of N:ZnO/ITO thin films system for opto-electronic functions", Mohd. Arif, Mohd. Shkir, Amit Sanger, S. AlFaify, **Arun Singh\***, **Optics and Laser Technology**, 112 (2019) 539-547 (*I.F.* – **4.939**).



- 27) "Higher permittivity of Ni-doped Lead Zirconate Titanate Pb (Zr<sub>0.52</sub> Ti<sub>0.48</sub>)<sub>1-x</sub> Ni<sub>x</sub> O<sub>3</sub>, ceramics", Nitu Kumari, Shagun Monga, Mohd. Arif, Neeraj Sharma, **Arun Singh\***, Vinay Gupta, Paula M. Vilarinho, K. Srinivas, R. S. Katiyar, **Ceramic International**, 45 (2019) 4398-4407 (*I.F.* – **5.532**).
- 28) "A structural, morphological, linear and nonlinear optical spectroscopic studies of nano-structured Al-doped ZnO thin films: An effect of Al concentrations", Mohd. Arif, Mohd. Shkir, S. AlFaify, V. Ganesh, Amit Sanger, H. Algarini, Paula M. Vilarinho, **Arun Singh\***, **Journal of Materials Research** 34 (8), pp. 1309-1317 (2019) (*I.F.* – **2.909**).
- 29) "Electrically reduced graphene oxide for photo-voltaic application", **Arun Singh\***, Neeraj Sharma, Mohd. Arif, Ram S. Katiyar, **Journal of Materials Research**, 34 (4), 652-660 (2019) (*I.F.* – **2.909**).
- 30) "One-step sputtered titanium nitride nano-pyramid thin electrodes for symmetric super-capacitor device", Mohd. Arif, Amit Sanger, **Arun Singh\***, **Materials Letters**, 245 (2019) 142-146, (*I.F.* - **3.574**).
- 31) "A significant effect of Ce doping on key characteristics of NiO thin films facilely fabricated by spin coater for optoelectronics", Mohd Arif, M. Shkir, V. Ganesh, **Arun Singh\***, H. Algarni, & S. AlFaify\*, **Superlattics & Microstructures**, 129 (2019) 230-239 (*I.F.* – **3.22**).
- 32) "Multifunctional Behavior of acceptor-cation substitution at higher doping concentration in PZT ceramics" Nitu Kumari, Shagun Monga, Mohd. Arif, Neeraj Sharma, Amit Sanger, **Arun Singh\***, Paula. M. Vilarinho, Vinay Gupta, K. Sreenivas, Ram S. Katiyar & James F. Scott, **Ceramics International**, 45 (2019) 12716-12726 (*I.F.* – **5.532**).
- 33) "A facile one-step flash combustion synthesis and characterization on C doped NiO nanostructures", Mohd. Shkir, Mohd. Arif, **Arun Singh\***, I.S. Yahia, H. Algarni, S. AlFaify, **Materials Science in semiconductors processing**, 100 (2019) 106–112 (*I.F.* – **4.644**).
- 34) "Effect of La doping on key characteristics of SnO<sub>2</sub> thin films facilely fabricated by spin coating technique", V. Ganesh, Mohd Arif, M. Aslam Manthrammel, **Arun Singh\***, S. AlFaify, **Optical Materials**, 94 (2019) 277-185 (*I.F.* – **3.754**).
- 35) "An effect of Fe on physical properties of nanostructured NiO thin films for nonlinear optoelectronic applications", Mohd. Shkir, Mohd. Arif, V. Ganesh, **Arun Singh\***, H. Algarni, I.S. Yahia, S. AlFaify, **Applied Physics A**, (2020), **Applied Physics A** (2020) 126:119 (*I.F.* – **2.584**).
- 36) "Investigation of bandgap alteration in graphene oxide with different reduction routes", Neeraj Sharma, Mohd. Arif, Shagun Monga, Mohd. Shkir Yogendra K. Mishra **Arun Singh\***, Vinay Gupta, Ram S. Katiyar, **Applied Surface Science**, Volume 513, 30 May 2020, 145396 (*I.F.* – **7.392**).
- 37) "Enhancement in photodetection properties of PbI<sub>2</sub> with graphene oxide doping for visible-light photodetectors" Neeraj Sharma, IM Ashraf, Mohd Taukeer Khan, Mohd Shkir, Mohamed S Hamdy, **Arun Singh**, Abdullah Almohammed, Fatma BM Ahmed, IS Yahia, S AlFaify, **Sensors and Actuators A: Physical**, Volume 314, 15 October 2020, 112223 (*I.F.* – **4.291**).
- 38) "Manganese-Doped ZnS QDs: an Investigation into the Optimal Amount of Doping" S Tomar, S Gupta, S Mukherjee, **A Singh**, S Kumar, RK Choubey, **Semiconductors**, 2020, Vol. 54, No. 11, pp. 1450–1458. (*I.F.* – **0.66**).
- 39) "Effect of substrates on optical properties of ferroelectric PZT (52/48) thin films", Shagun Monga, Stuti Tomar, Paula M Vilarinho, **Arun Singh**, **Materials Today: Proceedings**, Volume 36, Part 3, 2021, Pages 616-620.
- 40) "Study of Optical and Electrical Properties of Graphene Oxide" Neeraj Sharma, Stuti Tomar, Mohd Shkir, Ravi Kant Choubey, **Arun Singh**, **Materials Today: Proceedings**, Volume 36, Part 3, 2021, Pages 730-735.
- 41) "Optical properties of Silica capped Mn doped ZnS quantum dots" Stuti Tomar, Suhaas Gupta, Samrat Mukherjee, **Arun Singh**, Sunil Kumar, Vijay Kumar, Ravi Kant Choubey, 2021, **Phys. Scr.** 96 065802. (*I.F.* – **3.081**).



- 42) "Transitional ordering in reduced graphene oxide nanomaterials", Neeraj Sharma, Shagun Monga, Mohd Shkir, Yogendra K Mishra, Ram S Katiyar, **Arun Singh**, Materials Science in Semiconductor Processing, Volume 142, May 2022, 106478 (*I.F. – 4.644*).
- 43) "Qualitative analysis of PZT (52/48) MPB using different methods of synthesis" Shagun Monga, Neeraj Sharma, Navina Mehan, Yogendra Kumar Mishra, **Arun Singh**. Ceramics International, **Accepted. (I.F-5.532)**
- 44) "Ferroelectric, Piezoelectric Mechanism and Applications" **Arun Singh**, Shagun Monga, Neeraj Sharma, K Sreenivas and Ram S. Katiyar, Journal of Asian Ceramic Societies, **Accepted (I.F-3.125)**

#### **Under communication**

- 45) "Copper doped zinc oxide sputtered thin films for NO<sub>2</sub> gas sensing applications", **Arun Singh**, *Sensors & Actuators B: Chemical, (Under Review), (2021) (I.F. – 9.221)*.
- 46) "Progress in Processing techniques of ferroelectric materials", **Arun Singh**, Journal of Asian ceramics society, *(Under Review), (2021) (I.F. – 3.125)*.
- 47) "Piezoelectric Electromechanical Development of PCT" **Arun Singh**, Journal of Asian ceramics society, *(Under Review), (2021) (I.F. – 3.125)*.
- 48) "Linear and non-linear optical analysis of PZT/ZnO Heterostructures" **Arun Singh**, Journal of Asian ceramics society, *(Under Review), (2021) (I.F. – 3.125)*.

#### **(c) Proceedings Paper presented in conferences**

- 49) Characterization of Pb<sub>1-x</sub>Ca<sub>x</sub>TiO<sub>3</sub> Ceramics prepared by sol-gel derived powders, **Arun Singh**, Vinay Gupta, and K. Sreenivas, proc. of XIIIth National seminar of Ferroelectrics and Dielectrics, (2002), IISc, Bangalore
- 50) Optical and Dielectric Studies on Sol-Gel derived Pb<sub>1-x</sub>Ca<sub>x</sub>TiO<sub>3</sub>, **Arun Singh**, Vinay Gupta and K. Sreenivas, Proc. of XIIIth National seminar of Ferro. & Dielectrics, (2004) University of Delhi, Delhi-110007. **P. 35**
- 51) Hydrostatic properties of non-stoichiometric Sr<sub>1-x</sub>Ta<sub>x</sub>Ta<sub>2</sub>O<sub>9</sub>, Rajni Jain, **Arun Singh**, Vinay Gupta and K. Sreenivas, Proc. of XIIIth National seminar of Ferro. & Dielectrics, (2004) University of Delhi, Delhi. **P. 173-76**
- 52) Ba(Zn,Ta)O<sub>3</sub> Ceramics: Synthesis and their use as Microwave resonators, M.R. Tripathy, **Arun Singh**, N. Mehra. Proc. of Asia Pacific Microwave conference, (2004) New Delhi. **P. 127**
- 53) Fabrication of PbCaTiO<sub>3</sub> Ceramic using Sol-gel Derived Nano-crystalline Powder, **Arun Singh**, K. Sreenivas, Proc. of National seminar on Multifunctional Nanomaterials, Nanostructures and Application, (2006) University of Delhi, Delhi-110007. **P.93**
- 54) Persistence of ferroelectric pseudo cubic structure of b<sub>0.55</sub>Ca<sub>0.45</sub>TiO<sub>3</sub>, in "2<sup>nd</sup> International conference on Smart Materials and Structures" (2007) at Kiel University of Applied Science, Kiel, Germany.
- 55) Synthesis and Characterization of Cobalt Ion Doped Titanaium-Nano Particles by Sol Gel Route, Mohan Pal, **Arun Singh**, Davinder Singh, Sunil Dutta Sharma, Chander Kant, C. P. Sharma and K. K. Saini, Hybrid Materials 2011 Second International Conference on Multifunctional, Hybrid and Nanomaterials, 6-10 March 2011, Strasbourg, France
- 56) "Sustainable and Renewable Energy from DSSC - A Facile Method and Cost Effective Materials" Mohan pal, **Arun Singh**, K.K. Saini, WCMANU- 2011, Gurukula Kangri Vishwavidyalaya, Haridwar.
- 57) Highly Sensitive Nanostructured Dodecylbenzene Sulphonic Acid Doped Polyaniline based Ammonia Sensor, Jitender Kumar, **Arun Singh**, V. Gupta, presented in International Conference on Nanonaterials and Nanotechnology, ICNANO, New Delhi India-18-21 Dec.2011.
- 58) "Nanostructured Lead Sulphide assembled Titanium Dioxide thin films: Preparation and Characterization" Mohan Pal, **Arun Singh**, Sameer S. D. Mishra Chanderkant and K. K. Saini, in National Conference on Material Science, JMI, Delhi, India-Feb.2012

- 59) "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
- 60) "Studies of photovoltaic properties of nanocrystalline thin films", Arun Singh, Mohd. Arif, Ziaul Raza Khan, Siddhartha, Sonia Bansal, workshop on Nanotechnology and Embedded system (WNTEs) YMCA, Faridabad held on July 23 to Aug. 3, 2012
- 61) "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
- 62) "Growth and Characterization of ZnO Nanocrystalline thin film", Mohd. Arif, Ziaul Raza Khan, Siddhartha and Arun Singh, presented in National Symposium on Nanotechnology: Interdisciplinary Aspects, at YMCA University of Science and technology, Faridabad, held on Dec. 12, 2012.
- 63) "Optical properties of highly oriented BiFeO<sub>3</sub> 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
- 64) "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.
- 65) "Structural and optical properties of ZnO thin films by sol-gel process", Mohd. Arif, Arun Singh, Vinay Gupta and R.P. Tandon presented in **International Conference on Technologically Advanced materials and Asian Meeting on ferroelectricity ICTAM-AMF-10** during 07-11 Nov. 2016 at University of Delhi.
- 66) "Synthesis and Characterization of Graphene Oxide", Vaishali Gupta, Neeraj Sharma, and Arun Singh, presented in **India International Science Festival (IISF)** during 07-11 December 2016 at National Physical Laboratory New Delhi.
- 67) "Structural, Optical and vibrational properties of Sol-gel deposited ZnO thin films", Mohd. Arif Amit Sanger, Paula M. Vilarinho and Arun Singh, **International Conference on Thin Films (ICTF-17)** held at National Physical Laboratory, *Delhi 13-17 Nov. 2017*.
- 68) "Influence of interparticle interaction on the optical and magnetic properties of NiO nanoparticles", Mohd. Arif, Amit Sanger, Paula M. Vilarinho, and Arun Singh, **National Science Day 2018**, held at INSA, New Delhi, 28<sup>th</sup> Feb. 2018.
- 69) "Reduced Graphene oxide as transparent electrode", Neeraj Sharma, Arun Singh, **International Conference on Advanced Materials (ICAM-2019)** held at Jamia Millia Islamia, New Delhi, India, 6-7 March 2019.
- 70) "Lead Zirconate Titanate: Structural and Optical study", Shagun Monga, Paula M. Vilarinho and Arun Singh\*, **International Conference on Advanced Materials (ICAM-2019)** held at Jamia Millia Islamia, New Delhi, India, 6-7 March 2019.
- 71) "Investigation of band gap variation in Graphene Oxide with different reduction methods and theoretical substantiation", Neeraj Sharma, Shagun Monga, Mohd. Arif, Mohd. Shkir, Paula M. Vilarinho, Ram S. Katiyar & Arun Singh\*, **Elesviers-3rd International Conferences on Applied Surface Science (ICASS-2019)** held at Pisa Congress Palace, Pisa Italy, 17-20 June 2019.
- 72) "Synthesis, Characterizations of NiO nanoparticles for gas sensor", Mohd. Arif, A. Sanger, and Arun Singh\*, National Conference on Nano-Polysaccharides for Environmental Sustainability (NPES-2019), held at Jamia Millia Islamia New Delhi, India 25 September 2019.



**Conference on Advanced Functional Materials-2019 (NCAFM-2019)** held at Jamia Millia Islamia, New Delhi, India, 20-21 November 2019.

- 74) "Qualitative analysis of PZT powder and thin film at MPB", Shagun Monga, Paula M. Vilarinho, **Arun Singh\***, **National Conference on Advanced Functional Materials-2019 (NCAFM-2019)** held at Jamia Millia Islamia, New Delhi, India, 20-21 November 2019.
- 75) "Linear and Nonlinear Optical Properties of Mg Doped ZnO thin films", Mohd.Arif, Mohd. Shkir, **Arun Singh\***, **National Conference on Advanced Functional Materials-2019 (NCAFM-2019)** held at Jamia Millia Islamia, New Delhi, India, 20-21 November 2019.
- 76) "Oxidation Studies in Graphene Oxide" **1st International Congress On Natural Sciences (ICNAS-2021)**, Neeraj Sharma, **Arun Singh**, 10-12 September 2021, Atatürk University, ERZURUM, TURKEY.
- 77) "Structural, Linear and Third Order Nonlinear Optical Investigation of Sol-Gel Spin Coated PZT-ZnO Heterostructures on Different Substrates" **"1st International Congress On Natural Sciences (ICNAS-2021)**, Shagun Monga, **Arun Singh**, 10-12 September 2021, Atatürk University, ERZURUM, TURKEY.

#### **(d) Symposium / Workshop / Conferences Participated**

1. Participated in **2<sup>nd</sup> International conference on Smart Materials and Structures (2007)** at Kiel University of Applied Science, Kiel, Germany.
2. Participated in **XIIth National seminar of Ferroelectrics & Dielectrics**, (2002) IISc. Bangalore, India.
3. Participated in **Visitors Programme (2003)** Department of Physics & Astrophysics, University of Delhi, 07.
4. Participated in **4<sup>th</sup> Asian Meeting of Ferroelectric** (2003) IISc. Bangalore, India.
5. Participated in **Refresher course on Physics, (Jan. 2004)**, Centre of Professional Development for Higher Education (CPDHE), University of Delhi, Delhi-110007.
6. Participated in **Visitors Programme (2004)** Department of Physics & Astrophysics, University of Delhi, 07.
7. Participated in **XIIIth National seminar of Ferroelectrics & Dielectrics**, (2004) University of Delhi, Delhi-07.
8. Participated in **Asia Pacific Microwave conference**, (2004) New Delhi-110 001.
9. Participated in **Visitors Programme (2005)** Department of Physics & Astrophysics, University of Delhi, 07.
10. Participated in **Refresher course (2005)**, Centre of Professional Development for Higher Education (CPDHE), University of Delhi, Delhi-110007.
11. Participated in **Workshop on Sol-gel derived thin films and devices**, (June 2005) Dept. of Electronic Science, University of Delhi South Campus, New Delhi.
12. Attended, **International Conference on Nano Science and Technology (ICONSAT)**, (2006) IIT Delhi, D -16.
13. Participated in **Refresher course (2006), on Computer application in Physical Science**, Centre of Professional Development for Higher Education (CPDHE), University of Delhi, Delhi-110007.
14. Participated in **Visitors Programme (2006)** Department of Physics & Astrophysics, University of Delhi, 07.
15. Participated in **Indo-Chinese Workshop on MEMS and Related Technologies**, (2006) NPL, New-Delhi-12.
16. Participated in **Seminar on World Metrology Day and National Technology Day** (2006) NPL, New-Delhi-12.



17. Participated in **National Conference on Advanced in Technologically Important Crystals**, (2006) University of Delhi, and Delhi.
18. Participated in **National seminar on Multifunctional Nanomaterials**, Nanostructures and Application, (2006) University of Delhi, Delhi-110007.
19. Participated in **18<sup>th</sup> Annual General Meeting of MRSI on Materials for energy Generation, Conservation and Storage** (2007) NPL, New-Delhi-12.
20. Participated in **National seminar on India-UD Relations: Conversing & charging Perspectives**, University of Delhi Feb 1-2, 2007 Organised by American studies programme JNU.
21. Participated in **The Diamond Jubilee Celebration of NPL**, At Physics Deptt. DU on 12 April 2007.
22. Participated in **Sixth Abdus Salam Memorial lecture** by Prof. Douglas D. Osheroff Nobel Laureate) 2007-08, JMI, 24 Nov 2007.
23. Participated in **DS Kothari memorial Lecture** by K Kasturirangan, Director, IAS, Bangalore, at DU, 6 Feb. 2008.
24. Participated in **Seventh Abdus Salam Memorial lecture** by 2008-09, JMI, 20<sup>th</sup> Feb 2009.
25. Participated in **National seminar on condensed matter and High Energy Physics**, at Dept. of Physics, Jamia Millia Islamia New Delhi, 23- 24 Feb. 2009.
26. Participated in **International workshop on Physics of semiconductor Device (IWPSD-2009)**, at Jamia Millia Islamia New, Delhi, 15-19 Dec. 2009.
27. Participated in **National Seminar on Condensed Matter Physics** at Dept. of Physics, Jamia Millia Islamia New, Delhi, 19 Feb. 2010.
28. Participated in **43 IUPAC International Conference at San Juan USA**, Auguat-2011.
29. Presented a paper and Participated in **International Conference ECS BOSTON, USA**, Oct 9-14, 2011.
30. Presented a paper and Participated in **International Conference MRS, BOSTON, USA**, Nov. 29-02 Dec. 2011.
31. Presented a paper and Participated in **International Conference ICNANO** at University of Delhi, Delhi, and 18-21 Dec.2011.
32. Participated in **National seminar on condensed matter** at Dept. of Physics, Jamia Millia Islamia New, Delhi, 19 Feb. 2012.
33. Participated in **Ninth Abdus Salam Memorial lecture** by R Rajaraman at JMI, 24 Feb. 2012.
34. Participated in **Tenth Abdus Salam Memorial lecture** by Tariq Aziz at JMI, 30 Jan. 2013
35. Participated in **Eleventh Abdus Salam Memorial lecture** by Subodh R. Shenoy at JMI, 17 Feb. 2014
36. Participated in **Twelenth Abdus Salam Memorial lecture** by K.V. Raghavn at JMI, 11 Feb. 2015
37. Participated in **National seminar on Photonic and optical Materials** at Department of Physics, JMI New Delhi, 21 Jan. 2016
38. Participated in **thirteenth Abdus Salam Memorial lecture** by D. K. Srivastava at JMI, 26 Feb. 2016
39. Participated in **International Conference on Technologically Advanced materials and Asian Meeting on ferroelectricity ICTAM-AMF 10** during 07-11 Nov. 2016 at University of Delhi.
40. Participated in **Fourteenth Abdus Salam Memorial lecture** by Balasubramanian Iyer at JMI, 14 Feb. 2017
41. Participated in Extension lecture by **Prof. V.D. Vanker** Indian Institute of Technology Delhi, at CNN, JMI, 28 March 2017.
42. Participated in **International Conference on thin films (ICTF-17)**, organized by CSIR NPL held at National Physical Laboratory Delhi 13-17 Nov. 2017.
43. Participated in Public lecture by **Dr. Prabhat Jaiswal**, Weizmann Institute of Science, Israel at JMI, 18 Aug. 2017.
44. Participated in Fifteen Abdus Salam Memorial lecture by **Prof. Krishna Lal**, Former Director, CSIR-NPL at JMI, 07<sup>th</sup> Feb. 2018
45. Participated in **National Science Day, 2018** held at INSA, New Delhi, 28 Feb. 2018.
46. Participated in **Seminar on Functional genomic screen using CRISPR/Cas9 based genome editing for Human diseases**, organized by Centre for Interdisciplinary Research in Basic Sciences, Jamia Millia Islamia, New Delhi-25, 30 July 2018.
47. Participated in Public lecture by **Dr. Mukti M. Rana**, Delaware State University, USA at JMI, 03 Aug. 2018.

48. Participated in **Seminar on Confocal Raman Microscope with 3D Mapping and its application in Biotechnology, Pharmaceutical Science, Material and Health Science**, organized by Centre for Interdisciplinary Research in Basic Sciences, Jamia Millia Islamia, New Delhi-25, 10 Aug. 2018.
49. Participated in Public lecture by **Prof. Der-Jun Jang**, National Sun Yat-sen University of Kaohsiung, Taiwan at JMI, 12 Dec. 2018.
50. Participated in Public lecture by **Dr. Dhruva Jyoti Basu Roy**, City of Hope Cancer Centre Duarte, California, **USA**, USA at JMI, 12 Dec. 2018.
51. Participated in Public lecture by **Ms. Tania Paul**, IISER Triputi, India at JMI, 20 Dec. 2018.
52. Participated in **International Conference on Advanced Materials (ICAM-2019)** held at Jamia Millia Islamia, New Delhi, India, 6-7 March 2019.
53. Participated in Sixteen Abdus Salam Memorial lecture by **Prof. V. Balakrishnan**, IIT Madras, at JMI, 05 March 2019
54. Participated in Public lecture by **Prof. Der-Jun Jang**, National Sun Yat-sen University of Kaohsiung, Taiwan at JMI, 12 March 2019.
55. Hand on **Workshop on Prometheus NT.48 and Nano DSF by Nano temper** organized by Centre for Interdisciplinary Research in Basic Sciences, held at Jamia Millia Islamia, New Delhi-25, 22-23 July 2019
56. Participated in Seminar by **Dr. Aga Shahee**, Seoul National University, Seoul, Korea, at JMI, 30 July 2019
57. Participated in **Seminar Lectures on Sensors for Health Care Applications** organized by Department of Electrical Engineering, Faculty of Engineering & Technology held at Jamia Millia Islamia, New Delhi-25, 24 Sept. 2019.
58. Participated in **National Conference on Nano-Polysaccharides for Environmental Sustainability (NPES-2019)**, organized by Department of Chemistry held at Jamia Millia Islamia New Delhi, India 25 Sept. 2019.
59. Participated in **Distinguished Lecture under IEEE Day 2019 celebration** by JMI IEEE EMBS Student Branch chapter of Delhi Section organized by Department of Electrical Engineering, Faculty of Engineering & Technology held at Jamia Millia Islamia, New Delhi-25, 03 Oct. 2019.
60. Participated in Public lecture by **Prof. Jayant V Narlikar**, Emeritus Professor Inter University Centre for Astronomy & Astrophysics, Pune, India at JMI, 14<sup>th</sup> Oct. 2019.
61. Participated in Public lecture by **Dr. Bhabesh Chakrabarti**, Sr. Project Manager, Venila North America, USA at JMI, 14 Oct. 2019.
62. Participated in Public lecture by **Prof. Shankar Ghosh**, (Bhatnagar Awardee, 2019) Tata Institute of Fundamental Research (TIFR), Mumbai, India at JMI, 13 Nov. 2019.
63. Participated in **International Conference on Power Electronics, Control & Automation (ICPECA-1019)** organized by Department of Electrical Engineering, Faculty of Engineering & Technology held at Jamia Millia Islamia, New Delhi-25, India, 16-17 Nov. 2019.
64. Participated in **National Conference on Advance Functional Materials (NCAFM-2019)**, organized by Department of Chemistry held at Jamia Millia Islamia New Delhi, India, 20-21 Nov. 2019.

## Research Citations

Science Citation Index of Research Articles (Up to July 2022) Total Citations: 826<sup>+</sup>

### 2006

- 2005 **J. Appl. Phys. 97, 124101**  
Xinag P.-H., J. Mater. Res., 2006, 21, 1830-35

### 2007

- 2005 **J. Appl. Phys. 97, 124101**  
Zylberberg, Chemistry of Materials, 19, 6385-6390  
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Lv J.-H., Int. J. Appl.Ceram.Tech.2007, 4, 571-77  
Zylberberg, J., IEEE Int. Sym. Appl. of Ferroelectrics, art. No. 4393363, 665  
2006 **Mater. Sci. Eng., B 130, 81**  
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### 2008

- 2005 **J. Appl. Phys. 97, 124101**  
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2006 **Mater. Sc. Eng. B 130, 81**  
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2007 **J. Appl. Phys, 102, 074110**  
Frantti J., J. Physical Chemistry B, 2008, 112, 6521  
2007 **J. Physics chemistry of solids, 68, 119**  
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### 2009

- 2005 **J. Appl. Phys. 97, 124101**  
Tonshaku Tou *et al.*, Japanese Journal of Applied Physics, 2009, 48, 07GM03  
Coondoo, I., Materials Research Bulletin, 2009, 44, 1288-1292  
Zhang Qian, Rare Metals, 2009, 28, 142-146  
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2006 **Mater. Sc. Eng. B 130, 81**  
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2007 **J. Appl. Phys, 102, 074110**  
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Hu Hanchen, J. of Ame. Cera. Soci. 2009, 92, 2039-2045  
2007 **J. Physics chemistry of solids, 68, 119**  
Chabanyuk, A.N., Phys. Solid State, 2009, 51,165  
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## 2010

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Kim Jin Soo, Thin Solid Film, 2010, 6390-6393

R. Machado *et al.*, Journal of Materials Science, 2010, 45, 4912

Amit Tanwar *et al.*, Ferroelectrics, 2010,404, 19

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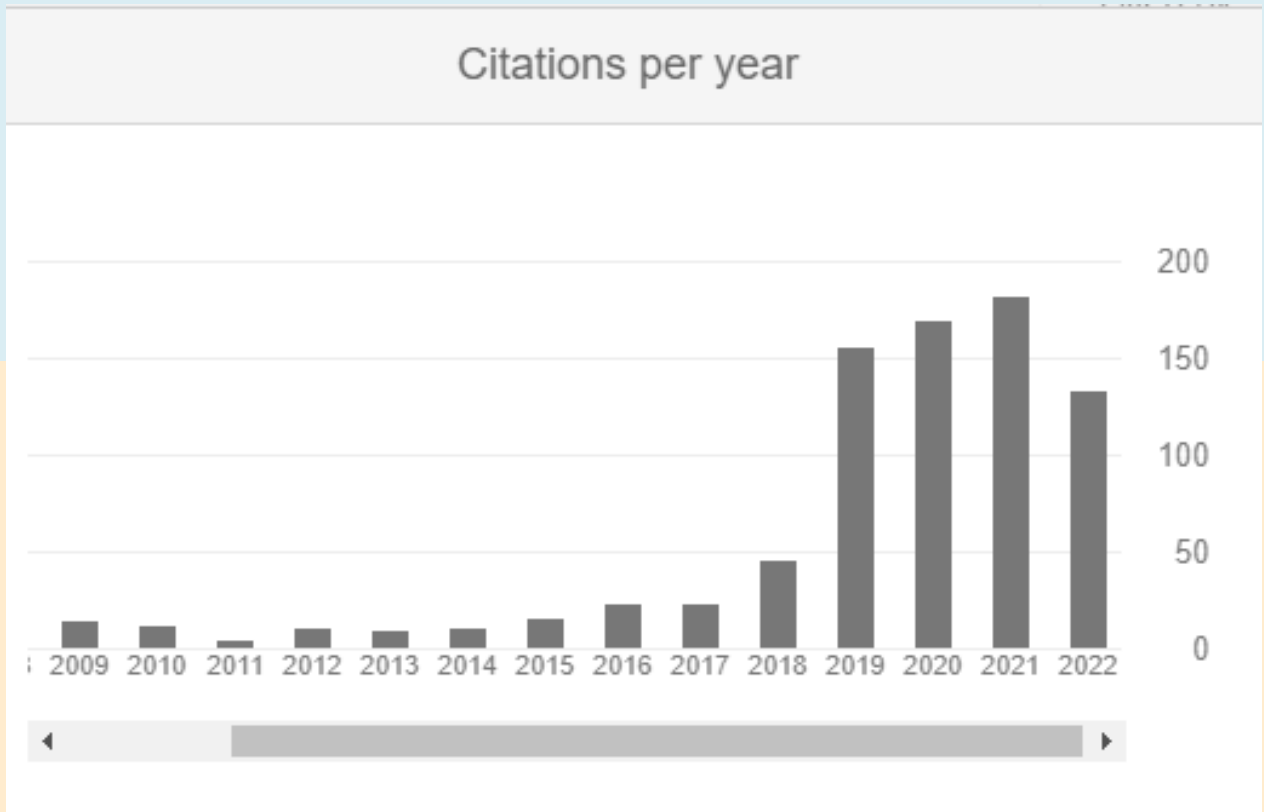
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