

Manika Khanuja, M.Sc (Physics) Ph.D (Physics)

Centre for Nanoscience and Nanotechnology

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Summary

I am having global exposure of research. I have given more than **20 invited talks, written 4 books, 8 book chapters, review article** and around **40 international publications** with **780 citations**. During my PhD, I prepared and characterized Palladium Nanoparticles and Bi-metal layers for enhanced hydrogenation properties in 2009. I observed a novel pulse like and concentration specific hydrogen sensing response in these materials.

I am a material scientist, and have gained experience in fabrication of various nanomaterials having applications in sensing, antimicrobial, and water disinfection technologies etc. using different physical and chemical routes. I have diverse experience on characterization by different analytical instruments including XRD, TEM, FESEM, UV-Vis Spectroscopy, AFM and XPS etc.

Research Areas

Synthesis, investigation, and tailoring two-dimensional materials and their heterostructures to pave the way for a new era of photocatalytic water disinfection and water splitting. Development of nanomaterials for various applications like Gas sensing, Bio-sensing, supercapacitor and Agricultural applications.

Education

Nov 2003 –Jul2009

Doctor of Philosophy, Nanoscience and Nanotechnology

Thesis: *Palladium Nanoparticles and Bimetal Layers For Enhanced Hydrogenation Properties*

Indian Institute of Technology, Delhi, India

Jul 1999 –Jun2001

M.Sc(Physics)

Indian Institute of Technology Delhi, India

Jul 1996 –Jun1999

BSc Physics (H)

University of Delhi, India

Research/ Teaching Experience

May 2016 – till date

Assistant Professor

Centre for Nanoscience and
Nanotechnology, Jamia Millia Islamia,
New Delhi

Dec 2013 – March 2016

Assistant Professor

Amity Institute of Nanotechnology
Amity University NOIDA (U.P.)

Aug 2010 – Dec 2013

Assistant Professor (Adhoc)

Delhi University

Mar 2009 – Jul2010

Project Scientist

“Pd bi-metal Nanoparticles and multilayer Structures of Improved Hydrogenation in Rare Earth Switchable Mirrors” (RP02029) Indian Institute of Technology Delhi, Department of Physics New Delhi, India.

Jun 2007 – Dec2007

Guest Scientist

“Size selected deposition of Pd and rare earth nanoparticles using Gas phase synthesis technique” University of Duisburg-Essen, CENIDE – Center for Nanointegration Duisburg-Essen Duisburg, North Rhine-Westphalia, Germany.

Research Projects

S. No.	Title of Research Project	Funding Agency	Date of Sanction	Grant/Amount Mobilized (Rs. Lakhs)	Whether you are the PI/Co-PI/Consultant	Status Ongoing/ Completed
1	In vivo Central Venous Catheters associated biofilm infection surface treatment using nanomaterials NMS to decrease the thrombotic and infection risks(DST/NM/NB/2018/203(G)(JMI)	Nanomission, Department of Science and Technology (DST), INDIA	17/01/2020	23,97,696/-	CO-PI	Ongoing
2	Physical basis of domain engineering in piezoelectric single crystals of PMN-PT and lead free piezoceramics(DST/IMRCD/BRICS/Pilotcall1/CdomEng/2017(G)	BRICS Multilateral Project, Department of Science and Technology (DST), INDIA	17/04/2018	36,83,544/-	Member/Co-PI	Ongoing
3	Effect of ion beam irradiation to create Sulphur vacancy for high photoresponsivity & Gas sensitivity in MS ₂ (M=Mo, W) films(Ref.IUAC/XIII.3A/)	Beam Time Allotment (BTR), Inter-University Accelerator Centre (IUAC), INDIA	31/07/2018	Nil	PI	Ongoing
4	Hybrid 2D MoS ₂ Nanosheets for Photocatalytic Water Purifications(ECR/2017001222)	Science and Engineering Research Board (SERB), INDIA	17/03/2017	30,98,308/-	PI	Ongoing
5	To understand the mechanism of Zinc Oxide Nanorods on fungus and Plant productivity(SR/NM/NB-1039/2016(G)	Nanomission, Department of Science and Technology (DST), INDIA	30/11/2017	42,59,688/-	Co-PI	Ongoing
6	Start-up-grant(No.F.4(201-FRP)/2015(BSR)	University Grant Commission (UGC), INDIA	27/03/2017	6,00,000/-	PI	Completed
7	Advanced Nanomaterials for Li-ion Batteries, Supercapacitors and Fuel Cells (IIT/GIAN/S-17/1240)	Global Initiative of Academic Networks (GIAN) by Government of India, Ministry of Human Resource and Development (MHRD)	09/13/2017	8,16,000/-	PI	Completed
8	India- Japan Cooperative Science Program (IJCSP)	DST-JSPS Special Lecture Tour Program	07/11/2016	80,000/-	Host	Completed

February 2020 **Global Challenges Research Fund (GCRF) Visiting Fellowship 2019-2020 as David Livingstone Fellow** for a period of 3 months.

February 2020 Award : Best poster presentation on "Architectural design of 2D/3D hybrid structure based on MoS₂-PANI for high photoresponsive activity" Nahid Chaudhary and Manika Khanuja" National Workshop on "Nano Road Show-2020", Feb 1, 2020, Miranda House, University of Delhi, New Delhi, India.

February 2020 Award : Best poster presentation on "Interfacial Charge Carrier Dynamics of the MoSe₂ Conducting polymer (MoSe₂-PANI) Heterojunction" Honey Mittal and Manika Khanuja" **International conference on Advanced Material and Nanotechnology (AMN-2020)** Feb 20-22, 2020, Jaypee Institute of Information Technology, Noida India

January 2020 Award: Best poster presentation on "Facile hydrothermal synthesis and characterization of CeO₂ for photocatalytic degradation of malachite green: Direct Z-scheme photocatalyst" Honey Mittal, Manika Khanuja, **National Conference on Emerging Trends in Applied Materials Science and Surface Engineering, (ETAMS2020)** Jan 16-17, 2020, BML MUNJAL UNIVERSITY, Haryana, INDIA

January 2020 Award: Best poster presentation on "Hydrothermal synthesis of 2D MoS₂ Nanosheets and its hybrid structure for photodetector application" Nahid Chaudhary, Manika Khanuja, **National Conference on Emerging Trends in Applied Materials Science and Surface Engineering, (ETAMS2020)** Jan 16-17, 2020, BML MUNJAL UNIVERSITY, Haryana, INDIA

July 2019 Certificate of appreciation in faculty development program (FDP) on "Synthesis and Characterization of Materials" 1-6 July, 2019, Jaypee Institute of Information Technology (JIIT), Noida

June 2018 Travel Grant: Indian National Science Academy (INSA) New Delhi, India for Scanning Probe Microscopy (SPM 2018) 26-29 August 2018, Russia with a amount of Rs 30,000/-. Sanction no **SS/INSA/2018 dated 07-06-2018**.

January 2018 Award: Best poster presentation on "Effective TMOs on pollutants of water and study of the phenomenon with 2D nanomaterials acting as catalyst leading to water remediation" Iram Siddiqui, Prakalp Gautam, Mohammad Ali, Manika Khanuja, **National Conference on Emerging Trends in Applied Materials Science and Surface Engineering, BML MUNJAL UNIVERSITY, Haryana, INDIA**

November 2017 Travel Grant: Science and Engineering Research Board (SERB), New Delhi, INDIA for **15th International Conference on advanced materials (IUMRS-ICAM 2017)** held during **27th August 2017 to 1st August 2017** in Kyoto, Japan & sanctioned no. **SERB/F/7649/2017-18** dated **10 Nov 2017**.

October 2015 Award: 2nd prize for best research poster presentation "**Synthesis and characterization of ZnO Nanostructures for Photocatalytic, Anti corrosive and antimicrobial applications.**" Ravi Pendurthi and Manika Khanuja, 12th International Symposium on Surface Protective Coatings. Indian Expo, Greater Noida.

June 2015 Award: **UGC-Assistant Professor** from University Grant Commission, New Delhi, INDIA.

April 2009 Award: "**Hydrogen sensors based on Palladium nanoparticles**", Pragya Agar, Manika Khanuja and B. R. Mehta, Open House organized by IIT Delhi April 18, 2009.

November 2005 Scholarship: CSIR-UGC Senior Research Fellowship by Council of Scientific & Industrial Research, New Delhi, INDIA

November 2003 Scholarship: CSIR-UGC **Junior Research Fellowship (JRF)** by Council of Scientific & Industrial Research New Delhi, INDIA

December 2002

Award: CSIR-UGC **Junior Research Fellowship (JRF)** (F.No.2-56/2002(II)EU.II) and Eligibility for Lectureship – **National Eligibility Test (NET)** New Delhi, INDIA

August 1995

Award: **Young Astronomer Award** by Nehru Planetarium, Ten Murti House, New Delhi, India.

Publication Highlights

Journal Publications

1. Singhal, C., Shukla, S. K., Jain, A., Pundir, C., Khanuja, M., Narang, J., & Shetti, N. P. (2020). Electrochemical multiplexed paper nano-sensor for specific dengue serotype detection predicting pervasiveness of DHF/DSS. **ACS Biomaterials Science & Engineering**, (2020), <https://doi.org/10.1021/acsbiomaterials.0c00976>.
2. Honey Mittal and **Manika Khanuja**, Hydrothermal in-situ Synthesis of MoSe₂-Polypyrrole Nanocomposite for Efficient Photocatalytic Degradation of Dyes under Dark and Visible Light Irradiation, **Separation and purification technology**, (2020), 117508
3. Waseem Asharf, Shikha Bansal, Vikrant Singh, Sanmitra Barman, **Manika Khanuja**, BiOCl/WS 2 hybrid nanosheet (2D/2D) heterojunctions for visible-light-driven photocatalytic degradation of organic/inorganic water pollutants, **RSC Advances** 10(42) (2020) 25073.
4. Shreya Saha, Nahid Chaudhary, Arun Kumar, **Manika Khanuja**, Polymeric nanostructures for photocatalytic dye degradation: polyaniline for photocatalysis **SN Applied Sciences**, (2020), 2, 1115
5. Honey Mittal, **Manika Khanuja**, Nanosheets and nanorods-like nanostructures of MoSe₂ for photocatalytic water purification: Kinetics and reusability study, **Environmental Science and Pollution Research** (2020) 27(19), 23477-23489
6. Shikha Wadhwa, Alishba T John, Ashish Mathur, **Manika Khanuja**, Gourav Bhattacharya, Susanta S Roy, Sekhar C Ray, Engineering of luminescent graphene quantum dot-gold (GQD-Au) hybrid nanoparticles for functional applications, **MethodsX** (2020) 7 100963.
7. Utkarsh Jain, Shringika Soni, Yatan Pal Singh Balhara, **Manika Khanuja**, Nidhi Chauhan, Dual-Layered Nanomaterial-Based Molecular Patterning on Polymer Surface Biomimetic Impedimetric Sensing of a Bliss Molecule, Anandamide Neurotransmitter, **ACS Omega** (2020), 5, 19, 10750–10758.
8. Honey Mittal, **Manika Khanuja**, Interfacial Charge Carrier Dynamics of the MoSe₂ Conducting polymer (MoSe₂-PANI) Heterojunction, **Materials today: Proceedings**, (2020). <https://doi.org/10.1016/j.matpr.2020.02.156>
9. Uma Singhal, Ravi Pendurthi, **Manika Khanuja**, Prunus: A natural source for the synthesis of zinc oxide nanoparticles towards photocatalytic and antibacterial applications **Materials today: Proceedings**, (2020). <https://doi.org/10.1016/j.matpr.2020.01.606>
10. Honey Mittal, **Manika Khanuja**, Optimization of MoSe₂ Nanosheets by surface modification using conducting polymer for enhanced photocatalytic activity: Photocatalysis mechanism, reaction kinetics and intermediate product study, **Dyes and Pigments** 175, (2020) 108109. <https://doi.org/10.1016/j.dyepig.2019.108109>
11. Arun Kumar, **Manika Khanuja**, A comparative photocatalytic study of pure and acid etched template free graphitic C₃N₄ on different dyes: An investigation on the influence of surface modifications, **Materials Chemistry and Physics**, 243 (2020) 122402. <https://doi.org/10.1016/j.matchemphys.2019.122402>
12. Shikha Wadhwa, Ashish Mathur, Ravi Pendurthi, Uma Singhal, **Manika Khanuja**, S S Roy, Titania based porous nanocomposites for potential environmental applications, **Bulletin of Materials Science** 43 (1), (2020) 1-9 <https://doi.org/10.1007/s12034-019-2009-8>

13. Anoop Singh, Sandeep Arya, **ManikaKhanuja**, A.K Hafiz, Eu doped NaYF₄@Er:TiO₂ nanoparticles for tunable ultraviolet light based anti-counterfeiting applications, **Microsystem Technologies**, (2020) DOI: 10.1007/s00542-019-04734-3
14. Nahid Chaudhary, **ManikaKhanuja**, Architectural design of photodetector based on 2D (MoS₂ nanosheets)/ 1D (WS₂ nanorods) heterostructure synthesized by facile hydrothermal method, **ECS: Journal of Electrochemical Society** 166 (14), (2019) B1276-B1285. doi: 10.1149/2.0341914jes
15. Waseem Ashraf, Tarab Fatima, Ketki Srivastava **ManikaKhanuja**, Superior Photocatalytic Activity of WS₂ Nanostructures: Role of Morphology and defects, **Applied Nanoscience**, 9 (7) (2019) 1515-1529 doi: 10.1007/s13204-019-00951-4.
16. Honey Mittal, Arun Kumar and **ManikaKhanuja**, In-situ oxidative polymerization of aniline on hydrothermally synthesized MoSe₂ for enhanced photocatalytic degradation of organic dyes, **Journal of Saudi Chemical Society** (2019), 23 (7), 836-845. doi: 10.1016/j.jscs.2019.02.004
17. Nahid Chaudhary, **ManikaKhanuja**, S.S Islam, Broadband photodetector based on 3D architect of MoS₂-PANI hybrid structure for high photoresponsive properties, **Polymer** 165, (2019), 168-173, doi : 10.1016/j.polymer.2019.01.028.
18. Honey Mittal, **ManikaKhanuja**, Nanosheets and nanourchins like nanostructures of MoSe₂ for photocatalytic water purification: kinetics and reusability study, **Environmental Science and Pollution Research**, (2019) 1-13, doi: 10.1007/s11356-019-06275-8.
19. Annu Mishra, Tarab Fatima, Jagriti Narang, Sudheesh K. Shukla, Rachna Rawal, Ashish Mathur, Akshay Jain , **ManikaKhanuja**, Self-assembled Two-Dimensional Molybdenum Disulphide nanosheets Geno-Interface for the detection of Salmonella, **ACS Omega** 4 (12), (2019) 14913-14919 doi:10.1021/acsomega.9b01651.
20. Neelam Patel, **ManikaKhanuja**, Ajit Varma, Manpreet Kaur Attri, Hemesh Joshi, Surbhi Dabral and Shubhangi Mahajan, Interaction of Piriformosporaindica (Serendipitaindica) with ZnO Nanoparticles and their Impact on Brassica oleracea, **Acta scientific pharmaceutical sciences** 3(7) (2019) 78-80.
21. Shubhangi Mahajan, Shilpa Barthwal, Manpreet Kaur Attri, Sneha Bajpai, Surbhi Dabral, **ManikaKhanuja**, Ajit Varma, Impact of ZnO Nanomaterials on Medicinal Black Rice Seed Germination, **Journal of Minerals and Characterization Engineering**, 7(4) (2019) 180-192 DOI: 10.4236/jmmce.2019.74014
22. Nidhi Chauhan, Anjali Harikumar, **ManikaKhanuja**, Shaivya Gupta, Utkarsh Jain, Pd nanoparticles and molybdenum disulfide integrated sensing platform for the detection of neuromodulator, **Process Biochemistry**, (2019) 81, 48-56. doi: 10.1016/j.procbio.2019.03.019
23. Nahid Chaudhary, **ManikaKhanuja**, Abid, S.S. Islam, Hydrothermal synthesis of MoS₂ nanosheets for multiple wavelength optical sensing applications, **Sensors and Actuators A: Physical** 277, (2018) 190-198. doi: 10.1016/j.sna.2018.05.008.
24. Chaitali Singhal, **ManikaKhanuja**, Nahid Chaudhary, C. S. Pundir & Jagriti Narang, Detection of chikungunya virus DNA using two-dimensional MoS₂ nanosheets based disposable biosensor, **Scientific Reports** 8 (2018) 7734. doi: 10.1038/s41598-018-25824-8.
25. Iram Siddiqui, Honey Mittal, Vivek Kr. Kohli, Prakash Gautam, Mohammad Ali and **ManikaKhanuja**. Hydrothermally synthesized micron sized, broom-shaped MoSe₂ nanostructures for superior photocatalytic water purification, **Material Research Express** 5 (2018) 125020. doi:10.1088/2053-1591/aee241.
26. Sonal Singh, Aakansha Ruhela, Sanju Rani, **ManikaKhanuja** and Rishab Sharma, Concentration specific and tunable photoresponse of bismuth vanadate functionalized hexagonal ZnO nanocrystals based photoanodes for photoelectrochemical application, **Solid State Sciences** 76 (2018) 48-56, doi: 10.1016/j.solidstatesciences.2017.12.003

27. Sonal Singh, Rishabh Sharma, **ManikaKhanuja**, A review and recent developments on strategies to improve the photocatalytic elimination of organic dye pollutants by BiOX (X=Cl, Br, I, F) nanostructures, **Korean Journal of Chemical Engineering**, 35 (2018) 1955-1968. doi:10.1007/s11814-018-0112-y.
28. Jagriti Narang, Annu Mishra, Roberto Pilloton, Alekhya VV, Shikha Wadhwa, Chandra Shekhar Pundir, and **ManikaKhanuja** Development of MoSe₂ Nano-Urchins as a Sensing Platform for a Selective Bio-Capturing of *Escherichia coli* Shiga Toxin DNA, **Biosensors** 8 (2018) :77. doi: 10.3390/bios8030077.
29. Jagriti Narang, Chaitali Singhal, **ManikaKhanuja***, Ashish Mathur, Akshay Jain and C. S. Pundir: Hydrothermally synthesized zinc oxide nanorods incorporated on lab-on-paper device for electrochemical detection of recreational drug: **Artificial Cells, Nanomedicine and Biotechnology** (2017) Taylor and Francis. doi: 10.1080/21691401.2017.1381614.
30. Uma Singhal, **ManikaKhanuja**, Ram Prasad and Ajit Varma Synergistic association of ZnO nanorods and Symbiotic Fungus *Piriformospora indica* DSM 11827 for enhanced Brassica oleracea var. botrytis (Broccoli) productivity: **Frontiers in Microbiology** 17 (2017) 1909. doi:10.3389/fmicb.2017.01909.
31. Rishabh Sharma, **ManikaKhanuja**, O P Sinha, Shaliesh N Narayan: Reduced band gap and charge recombination rate in Se doped α -Bi₂O₃ leads to enhance photoelectrochemical and photocatalytic performance : Theoretical and Experimental Insight: **International Journal of Hydrogen Energy** 42 (2017) 20638-48. doi: 10.1016/j.ijhydene.2017.07.011
32. Jagriti Narang , Chaitali Singhal , Ashish Mathur , **ManikaKhanuja**, Ankur Varshney, Kartikey Garg , Tulika Dahiya N, C.S. Pundir Lab on paper chip integrated with Si@GNRs for electroanalysis of diazepam **Analytica Chimica Acta** 980 (2017) 50-57. <https://doi.org/10.1016/j.aca.2017.05.006>.
33. Arpit Baral, **ManikaKhanuja***, S.S. Islam, Rishabh Sharma, B. R. Mehta: Identification and origin of visible transitions in one dimensional (1D) ZnO Nanostructures: Excitation wavelength and morphology dependence study. **Journal of Luminescence**: 183 (2017) 383-390. <https://doi.org/10.1016/j.jlumin.2016.11.060>.
34. Sonal Singh, Ravi Pendurthi, **ManikaKhanuja***, S.S. Islam, Suchitra Rajput, S. M. Shivaprasad: Copper-doped modified ZnO nanorods to tailor its light assisted charge transfer reactions exploited for photo-electrochemical and photo-catalytic application in environmental remediation. **Applied Physics A**: 123 (2017) 184 <https://doi.org/10.1007/s00339-017-0806-8>.
35. Rishabh Sharma, **ManikaKhanuja***, S.S Islam, Uma Singhal, Ajit Varma: Aspect ratio dependent photoinduced antimicrobial and photocatalytic organic pollutant degradation efficiency of ZnO nanorods. **Research on Chemical Intermediates**: 43 (2017) 5345-5364 <https://doi.org/10.1007/s11164-017-2930-7>.
36. Rishabh Sharma, Uma, Sonal Singh, Ajit Varma, **ManikaKhanuja***: Visible light induced bactericidal and photocatalytic activity of hydrothermally synthesized BiVO₄ nano-octahedra. **Journal of Photochemistry and Photobiology**: 162 (2016) 266-272 <https://doi.org/10.1016/j.jphotobiol.2016.06.035>.
37. Tamanna Bhuyan, **ManikaKhanuja***, R. Sharma, S. Patel, M. R. Reddy, S. Anand, A. Varma: A comparative study of pure and copper (Cu)-doped ZnO nanorods for antibacterial and photocatalytic applications with their mechanism of action. **Journal of Nanoparticle Research**: 17 (2015) 288 <https://doi.org/10.1007/s11051-015-3093-3>.
38. Tamanna Bhuyan, Kavita Mishra, **ManikaKhanuja**, Ram Prasad, Ajit Varma: Biosynthesis of zinc oxide nanoparticles from *Azadirachta indica* for antibacterial and photocatalytic applications. **Materials Science in Semiconductor Processing**: 32 (2015) 55-61 <https://doi.org/10.1016/j.mssp.2014.12.053>.
39. **ManikaKhanuja**, Shubhra Kala, Saurab K. Sengar, B.R. Mehta; Interaction of Hydrogen with Rare Earth and Palladium Nanoparticles: Basic Issues and Novel Devices. **ChemInform, Proc. Indian National Science Academy**,

43(51) (2011)DOI: 10.1002/chin.201251173

- 40. ManikaKhanuja, Sanju Shrestha, B. R. Mehta, F. E. Kruis: Magnitude and time response of electronic and topographical changes during hydrogen sensing in size selected palladium nanoparticles. *Journal of Applied Physics*: 106(2011) 093515 <http://dx.doi.org/10.1063/1.3603053>.**
- 41. YanguangNie, Yan Wang, Yi Sun, Ji Sheng Pan, B.R. Mehta, **ManikaKhanuja**, S. M. Shivaprasad, Chang Q. Sun: CuPd interface charge and energy quantum entrapment: a tight-binding and XPS investigation. *Applied Surface Science*: 257 (2011) 727-730<https://doi.org/10.1016/j.apsusc.2010.07.049>.**
- 42. Chang Q Sun, Yan Wang, Yan GuangNie, B R Mehta, **M Khanuja**, S. M. Shivaprasad, Yi Sun, Ji Sheng Pan, L. K. Pan, Zhuo Sun: Interface quantum trap depression and charge polarization in the CuPd and AgPd bimetallic alloy catalysts. *Physical Chemistry Chemical Physics*: 12 (2010) 3131-3135<https://doi.org/10.1039/B922677J>.**
- 43. ManikaKhanuja, B. R. Mehta, Pragya Agar, P. K. Kulriya, D. K. Avasthi: Hydrogen induced lattice expansion and crystallinity degradation in palladium nanoparticles: Effect of hydrogen concentration, pressure, and temperature. *Journal of Applied Physics*: 106 (2009) 093515<http://dx.doi.org/10.1063/1.3253733>.**
- 44. ManikaKhanuja, B. R. Mehta, S. M. Shivaprasad: Two approaches for enhancing the hydrogenation properties of palladium: Metal nanoparticle and thin film over layers. *Journal of Chemical Sciences*: 120 (2008) 573-578 <http://dx.doi.org/10.1063/1.3253733>.**
- 45. ManikaKhanuja, Shubhra Kala, B R Mehta, F E Kruis: Concentration-specific hydrogen sensing behavior in monosized Pd nanoparticle layers. *Nanotechnology*: 20 (2009) DOI: 10.1088/0957-4484/20/1/015502.**
- 46. ManikaKhanuja, Himani Sharma, B.R. Mehta, S.M. Shivaprasad: XPS depth-profile of the suboxide distribution at the native oxide/Ta interface. *Journal of Electron Spectroscopy and Related Phenomena*:169 (2009) 41-45<https://doi.org/10.1016/j.elspec.2008.10.004>.**
- 47. ManikaKhanuja, B.R. Mehta, S. M. Shivaprasad: Geometric and electronic changes during interface alloy formation in Cu/Pd bimetal layers. *Thin Solid Films*: 516 (2008) 5435-5439 <https://doi.org/10.1016/j.tsf.2007.07.117>.**
- 48. ManikaKhanuja, Deepak Varandani, Bodh R. Mehta: Pulse like hydrogen sensing response in Pd nanoparticle layers. *Applied Physics Letters*: 91 (2007) 253121 <http://dx.doi.org/10.1063/1.2826541>.**
- 49. ManikaKhanuja, Shubhra Kala, B R Mehta, Himani Sharma, S M Shivaprasad, B Balamurgan, A Maisels, F E Kruis: XPS and AFM studies of monodispersed Pb/PbO core-shell nanostructures. *Journal of Nanoscience and Nanotechnology*: 7 (2007) 1-5 <https://doi.org/10.1166/jnn.2007.776>.**

Books Published

- 1) Small Bite, Big Threat Deadly Infections of the Aedes Aegypti, Jagriti Narang and **ManikaKhanuja** ,Jenny Stanford Publishing, ISBN:9781003003298

- 2) Mathematical Physics-I, B. D. Gupta, **ManikaKhanuja**, Sachin Kumar, Vikas Publishing House Pvt. Ltd. (2018) ISBN: 978-93-5338-165-3-9789353381653.
- 3) *Laboratory-I: Advanced Electronics and Physics MSc. Physics* **ManikaKhanuja**, Sachin Kumar, Vikas Publishing House Pvt. Ltd. (2018) ISBN: : 978-93-5338-250-6-9789353382506.
- 4) *Nanoscience and Plant–Soil Systems*, Mansour Ghorbanpour, **ManikaKhanuja**, Ajit Varma: Springer International Publishing (2017) ISBN: eBook ISBN: 978-3-319-46835-8, Hardcover ISBN: 978-3-319-46833-4, Series ISSN: 1613-3382.
- 5) *Palladium Nanoparticles and Bimetal Palladium layers for Enhanced Hydrogenation Properties* **ManikaKhanuja**, Lambert Academic Publishing (2017) ISBN 978-3-330-06303-7.
- 6) *Proceedings of International Conference on Advances in Nanomaterials and Nanotechnology S.S. Islam, ManikaKhanuja, Prabhask Mishra: (ICANN 2016)* Bharti Publication., ISBN: 978-93-85000-94-2.
- 7) *Fundamentals of Medical Imaging Technology* Dr. Ajai Kumar Srivastava, Dr. Seema Rawat, Dr. SmitaKorpai, **ManikaKhanuja**: (06/2013) Vikas® Publishing House, Noida (UP)., ISBN: 978-99-259-8823-3

Books Chapter Published

- 1) Narrow Bandgap Semiconductors for Photoelectrochemical Water Splitting, Sonal Singh, Rishabh Sharma and ManikaKhanuja, Photoelectrochemical Water Splitting, edited by Inamuddin, **Material Research Forum LLC, ISBN - 978-1-64490-072-7**
- 2) *Nickel and Cobalt-materials for Zn batteries*, Sonal Singh, Rishabh Sharma, ManikaKhanuja, Zinc Batteries: Basics, Development and Applications, edited by Inamuddin **Scrivener Publishing LLC (2019), ISBN-1119661897.**
- 3) *Carbon based Electrocatalysts*, Sonal Singh, Rishabh Sharma, **ManikaKhanuja**, Method for Electrocatalysis, edited by Inamuddin, Satyanarayana, Boddula, Asiri, Abdullah M (chapter 12 pages 103-109), Springer (2019) ISBN 978-3-030-27161-9
- 4) *Engineered nanostructured materials for antimicrobial and photocatalytic applications* **ManikaKhanuja**, Uma, A Varma: Modern Tools and Techniques to Understand Microbes, 1 edited by Ajit Varma and Arun Kumar: (05/2017) chapter 2; Springer-Verlag GmbH., ISBN: 978-3-319-49195-0, DOI: 10.1007/978-3-319-49197-4.
- 5) *Role of Nanoparticles on Plant Growth with Special Emphasis on Piriformospora indica A Review* Ajit Varma, Uma, **ManikaKhanuja**: Nanoscience and Plant–Soil Systems, Soil Biology 48 edited by Ajit Varma (Editor) Mansour Ghorbanpour (Editor), **ManikaKhanuja (Editor)** (2016) chapter 14: pages 20; Springer International Publishing AG (2016) DOI:10.1007/978-3-319-46835-8-14.
- 6) *Synthesis and Characterization of Pure and Doped ZnO Nanostructures for Antimicrobial Applications: Effect of Dopant Concentration with Their Mechanism of Action* **ManikaKhanuja**, Uma, Ajit Varma: Nanoscience and Plant–Soil Systems, Soil Biology 48 edited by Ghorbanpour, Mansour, **ManikaKhanuja**, Ajit Varma (2016) chapter 6: pages 20; Springer International Publishing AG 2017., DOI:10.1007/978-3-319-46835-8-6.
- 7) Electrostatics by **ManikaKhanuja (2013)** Chapter 4: *Fundamentals of Medical Imaging Technology*, Sikkim Manipal University ISBN: 978-99-259-8823-3.
- 8) Modern Physics by **ManikaKhanuja (2013)** Chapter 6: *Fundamentals of Medical Imaging Technology*, Sikkim Manipal University ISBN: 978-99-259-8823-3.
- 9) *Inorganic Nanoparticles as Gas Sensors* V.N. Singh, B. R. Mehta, **ManikaKhanuja**: Inorganic Nanoparticles: Synthesis, Applications, and Perspectives, 2010 edited by Claudia Altavilla and Enrico Ciliberto (01/2010) chapter 4: pages 69-107; CRC Press Taylor & Francis Group., ISBN: 978-1-4398-1761-2 eBook ISBN: 978-1-4398-1762-9.

Patents

- 1) Uma, Manpreet Kaur Attri, Ajit Varma, Dr ManikaKhanuja: *Zinc oxide nanorods for fungus productivity and broccoli development*. Ref. No: 201611027833, Year: 12/2016.
- 2) Nada Rahman, Biswa Prakash Nayak, Jagriti Narang Malhotra, Dr ManikaKhanuja, Om Prakash Sinha:

Nanoparticles integrated with lactose on FTO act as sensing interface for femto-molar detection of Ricin. Ref. No: 201911002753, Year: 23/01/2019.

- 3) Pd Nanoparticles and Molybdenum disulphide(MoS₂) Integrated Sensing, Dr ManikaKhanuja Application No 201911024092
- 4) Novel rice based fortified food targeting Micro- and Micro-Nutritional Deficiencies in Malnourished Children and Women, Applications

Invited Talks (National / International)

S. No.	Title / Academic Session with date	Lecture/Resource Person/Paper presentation/full paper in Conference Proceedings	Agency	Whether International (Abroad) / International (within country)/ National/State/ University level
1	Enhanced photocatalytic performance of g-C ₃ N ₄ and Tg- C ₃ N ₄ for dye degradation: A study on the influence of surface modifications (Feb 20-22, 2020)	Invited Talk	AMN-2020 Jaypee Institute of Information technology, Noida, India	International
2	Photocatalysis: Strategies and development to overcome energy crisis and water pollution (Jan 16-17, 2020)	Invited Talk	(ETAMS2020) BML MUNJAL UNIVERSITY, HARYANA	National
3	Advanced Nanostructure (Jan 22, 2019)	Invited Talk	Miranda House, Delhi University, New Delhi, India	National
4	Temperature dependent Raman and dielectric studies of Fe doped BCZT, BRICS project meeting (Jan 8 th , 2020)	Invited Talk	Jiao Tong University, Xi'an, China	International
5	Atomic, Molecular, Optical and Nano Physics with Applications (Dec 18-20, 2019) (CAMNP-2019),	Invited Talk	Delhi Technological University, New Delhi	International
6	Nano-Polysaccharides for Environmental sustainability (Sep 25, 2019)	Invited Talk	Department of Chemistry, Jamia Millia Islamia, New Delhi	National
7	Advanced Nano-structure Materials for Water Purifications, (July 15-17, 2019)	Invited Talk	Department Of Physics, University of Kashmir, INDIA	National
8	Synthesis and Characterization of Materials, (July 1-6, 2019)	Resource Person	Jaypee Institute of Information Technology, Noida, INDIA	National
9	International Conference on Nano-Sciences and High Energy Physics, Feb 4-6, 2019)	Keynote Speaker	Department of Physics, kirtipur, Kathmandu, Nepal	International
10	6 th International Conference on signal Processing & Integrated Networks, (March 7-8, 2019)	Keynote Speaker	Amity School of Engineering & Technology, Uttar Pradesh, Noida, INDIA	International
11	Biotechnology Research in India: Current Status and Future Prospects, (March 26-27, 2019)	Invited Talk	Jamia Hamdard, Hamdard Nagar, New Delhi, INDIA	National
12	Advanced Nanostructured Materials for Photocatalytic Water Purification,	Invited Talk	Ural Federal University,	International

	(August 26-29,2019)		Ekaterinburg, Russia	
13	International Conference on Innovation and Technology for Rural India, (Nov 15-16,2018)	Invited Talk	Global school of Science Park, Bah	International
14	Recent Advances in Chemical and Nano-Sciences, (Oct 29-30,2018)	Invited Talk	Department of Chemistry, HNB Garhwal University BGR Campus, Pauri (Garhwal), INDIA	National
15	Advanced Materials and Nanotechnology (AMN-2018) (Mar 15-17, 2018)	Invited Talk	AMN-2018 Jaypee Institute of Information technology, Noida,India	National
16	MoS ₂ / CNT composites for Superior Photocatalytic and Field emission Properties, (IUMRS-ICAM)(Aug 27-Sep,1 2017)	Invited Talk	Kyoto University, Japan	International
17	Nanotechnology:Ideas Innovations and Initiatives(ICN:3I)(Dec 06-08,2017)	Invited Talk	IIT,Roorkee,India	International

Research Guidance

Thesis Awarded: PhD

Sr No.	Name	Degree	Title	Date of joining
1.	Nahid Chaudhary	PhD	Synthesis of 2D Materials for Photodetector Applications	Dec, 2016
2.	Honey Mittal	PhD	Synthesis and Characterization of MoSe ₂ and its Nanocomposites for Energy and Environment Remediation	Dec, 2017
3.	Arun Kumar	PhD	Investigating the properties of graphitic carbon nitride and it's 2D hybrid nanostructures for energy and environmental applications	Dec, 2017
4.	Waseem Ashraf	PhD	Electrophotochemical Study of WS ₂ and its composites	Dec, 2017
5.	Tarab Fatima	PhD	Carbon Quantum dot -2D Hybrid material for photocatalytic Applications	July, 2018

Conference Proceedings

1. N Chaudhary, M Khanuja, SS Islam: Synthesis of 2D MoS₂ Nanosheets by Facile Hydrothermal Method for Its Functioning as Multi Wavelength Optical Sensing, International Workshop on the Physics of Semiconductor and Devices, 1001-1003 (02/2019)
2. Ravi Pendurthi, ManikaKhanuja: *Effect of copper concentration on the photocatalytic activity of ZnO Nanorods*. 9th National Conference on Solid State Chemistry and Allied Areas, New Delhi (05/2015).
3. B.R. Mehta, S. Kala, M. Khanuja, F.E. Kruis: *Size-selected rare earth and palladium nanoparticles for hydrogen induced switching and sensing applications*. Nanoelectronics Conference, INEC. 2nd IEEE International; (04/2008) DOI:10.1109/INEC.2008.4585529.
4. *Pronounced light trapping effect and enhanced photoelectrochemical property of type (II) aligned graphitic-C₃N₄ embedded with 1-D ZnO nanostructures* Sonal Singh and ManikaKhanuja* Visible-Light Photocatalysis of Carbon-based Materials", ISBN 978-953-51-5612-3. InTechOpen (2017)

News Letter and Membership

- Fast, disposable biosensor for detecting chikungunya virus- Scientific Reports Story published in Nature Asia, <https://www.natureasia.com/en/nindia/article/10.1038/nindia.2018.66>, http://vigyanprasar.gov.in/isw/chikungunya_virus_story.html
- Lab-on-chip to detect diazepam, Story Published in Nature Asia doi:10.1038/nindia.2017.97 Published online 1 August 2017.
- Lab on paper chip integrated with Si@GNRs for electroanalysis of diazepam Anal. Chim. Acta 980, 50-57 (2017)
- The Indian Science Congress Association (life Membership ID: (L38211)
- Life Time Membership in Indian Association of Nanoscience and Nanotechnology (Membership ID: IANN LT 1178)
- Lifetime Member of Electron Microscope Society of India (EMSI) (Membership ID- LM-1263)
- Membership to the International Water Association (IWA), (Membership ID: 1618922)

Others

- 1) **Panelist: Abhyas**-Panel discussion on structure scenario and scope of research in India for HYS conference, 20 Feb 2020
- 2) **Evaluator**: Certificate of Appreciation by evaluating the students posters in the open house of IIT Delhi ,20 April 2019