

## Curriculum-Vitae

### **Dr. ANSHU SHARMA**

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### **Research Interest:**

Nanomaterials for clean energy and environment (gas separation, gas sensing, hydrogen storage) applications; Understanding synthesis, purification and characterization of carbon-based nanomaterials; Metal Organic Frameworks (MOFs); Membranes science technologies; Charge and mass transport in nanoscale systems; Photovoltaic technologies: organic and perovskites solar cells.

### **Work Experience/Employments:**

- **Assistant Professor**, Department of Physics, School of Engineering & Technology (SoET), Central University of Haryana, Mahendergarh, Haryana, India (Feb 2020-Current).
- **Women Scientist & Principal Investigator**, Department of Physics, Indian Institute of Technology Delhi, New Delhi, India (July 2016-July 2019).
- **Guest Scientist**, Max Planck Institute for Structure and Dynamics of Matter, Hamburg, Germany (Sept 2018- Dec 2018).
- **Guest Scientist**, Max Planck Institute for Structure and Dynamics of Matter, Hamburg, Germany (Sept 2016-Nov 2016).
- **Guest Scientist**, Microelectronics Research Center, Iowa State University, Ames, Iowa, USA (March 2016-June 2016).
- **Dr. D. S. Kothari Postdoctoral Fellow**, Centre for Non- Conventional Energy Resources, University of Rajasthan, Jaipur, Rajasthan and Department of Physics, DCRUST, Murthal, Sonipat, Haryana, India (Sept 2013-July 2016).
- **Research Associate**, Project Management Unit- Hydrogen Energy & Fuel Cells, Ministry of New and Renewable Energy (MNRE), Govt. of India, New Delhi, India (June 2013-Aug 2013).

- **Assistant Professor (Guest Faculty)**, Department of Physics, Malaviya National Institute of Technology (MNIT), Jaipur, Rajasthan, India (Dec 2011- May 2013).
- **Senior Research Fellow**, Department of Physics, University of Rajasthan, Jaipur, India (March 2010-Nov 2011).
- **Junior Research Fellow**, Department of Physics, University of Rajasthan, Jaipur, India (May 2008-Feb 2010).

### **Educational Qualifications :**

- **Ph.D. in Physics** on topic entitled “**Synthesis of Aligned CNT/Polymer Composites and Study of their Mass Transport Properties**” from Department of Physics, University of Rajasthan, Jaipur, India (2011).
- **M.Phil. in Physics** from Centre for Development of Physics Education (CDPE), University of Rajasthan, Jaipur, India (in 2008 with 73.2 %).
- **M.Sc. in Physics** from Banasthali Vidyapith, Banasthali, Rajasthan, India (in 2007 with 72.67%).
- **B.Sc. (Physics, Chemistry, Mathematics)** from University of Bikaner, Bikaner, Rajasthan, India (in 2005 with 77.78 %).

### **Teaching Experience: (04 Years)**

1. **Ph.D. courses:** Research Methodology; Experimental Methods.
2. **PG Physics courses:** Mathematical Physics; Instrumentation Methods and Advanced Analytical Techniques; Statistical Mechanics; Thin Films and Integrated Devices; Physics of Nanomaterials; Physics Lab.
3. **UG Physics courses:** Solar Energy and Physics of Photovoltaics; Electromagnetic Field Theory; Mechanics; Wave Optics and Quantum Mechanics; Physics Lab.

### **Course Curriculum Developed:**

1. **PG Physics courses:** Renewable Energy Resources; Solar Energy and Physics of Photovoltaics; Vacuum Science and Thin Film Technology; Introduction to Hydrogen Energy Systems; Physics of Nanomaterials.
2. **UG Physics course:** Mechanics

## **Completed Research Projects: 05**

1. Proposal Title: **Synthesis of Pt/Pd Modified Carbon Nanotubes and their Effective Role in Hydrogen Storage Applications**; Funding Agency: Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India; Fund: **31 Lacs**; Role: **Principal Investigator**; Duration: **Three Years** (2016-2019).
2. Proposal Title: **Structure and Dynamics of Functionalized and Catalysts Modified Carbon Nanotubes for Charge and Mass Transport Applications**; Funding Agency: Max Planck Gesellschaft (MPG), Germany and Indo German Science and Technology Center (IGSTC), Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India; Fund: **12 Lacs**; Role: **Max Planck-India Visiting Fellow**; Duration: **Four Years** (2016-2020).
3. Proposal Title: **Investigation on Transition Metal Doped Magnesium Nanomaterials for Hydrogen Storage Applications**; Funding Agency: All India Council for Technical Education (AICTE), Ministry of Human Resource and Development (MHRD), Govt. of India; Fund: **15 Lacs**; Role: **Collaborator**; Duration: **Three Years** (2017-2020).
4. Proposal Title: **Preparation and Characterizations of Functionalized Carbon Nanotubes for Hydrogen Storage Applications**; Funding Agency: University Grants Commission (UGC), Ministry of Human Resource and Development (MHRD), Govt. of India; Fund: **21 Lacs**; Role: **Dr. D. S. Kothari Postdoctoral Fellow**; Duration: **Three Years** (2013-2016).
5. Proposal Title: **CNT Doped Polymeric Membranes for Hydrogen Purification**; Funding Agency: Ministry of New and Renewable Energy (MNRE), Govt. of India; Fund: **30 Lacs**; Role: **Junior Research Fellow**; Duration: **Two Years** (2008-2010).

## **Ongoing Research Projects: 02**

1. Proposal Title: **Solar Photocatalytic Applications of Semiconducting Metal Oxide based Nanomaterials**; Funding Agency: University Grants Commission (UGC), Govt. of India; Fund: **10 Lacs**; Role: **Principal Investigator**; Duration: **Two Years** (2021-2023).
2. Proposal Title: **Metal Organic Frameworks based Mixed Matrix Membranes for CO<sub>2</sub> Capture and Gas Separation Applications**; Funding Agency: SERB, Department of Science & Technology, Govt. of India; Fund: **33 Lacs**; Role: **Principal Investigator**; Duration: **Two Years** (2021-2023).

## **Awards / Fellowships/ Achievements:**

### **List of Scholarships or Fellowships:**

- 1. Max Planck India Mobility Grant** award by Max Planck Gesellschaft (MPG), Germany and Indo German Science and Technology Center (IGSTC), Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India (2015).
- 2. Training and Research in Italian Laboratories (TRIL) Fellowship** awarded by International Center for Theoretical Physics, Trieste, Italy (2012).
- 3. Women Scientist-A award**, Department of Science and Technology, Ministry of Science and Technology, Govt. of India (2014).
- 4. Dr. D. S. Kothari Postdoctoral Fellowship** by University Grant Commission (UGC), Ministry of Human Research and Development, Govt. of India (2013).
- 5. Research Associateship** by Ministry of New and Renewable Energy (MNRE), Govt. of India (2013).
- 6. Senior Research Fellowship** by Ministry of New and Renewable Energy (MNRE), Govt. of India (2010).
- 7. Junior Research Fellowship** by Ministry of New and Renewable Energy (MNRE), Govt. of India (2008).

### **List of other academic honours or prizes:**

- 8.** Highly cited author (top 5% most cited authors in Royal Society of Chemistry Journal, 2020).
- 9. Max Planck Symposium for Alumni and Early Career Researchers - Travel Stipend Recipient-** by Max Planck Gesellschaft (MPG), Germany (**2019, 2018, 2017, 2016**).
- 10. International Travel Grant Award** by Science and Engineering Research Board (**SERB**), Department of Science and Technology (**DST**), Govt. of India and Centre for Cooperation in Science & Technology among Developing Societies (**CCSTDS**), Chennai for Participation in Materials Research Society Spring Meeting held at Phoenix, Arizona, USA during 28<sup>th</sup> March to 1<sup>st</sup> April, 2016.
- 11. International Travel Grant- Award** by International Center for Theoretical Physics (**ICTP**), Italy and UNESCO for Participation in a Workshop during 19<sup>th</sup> -23<sup>rd</sup> May, 2014.
- 12. International Travel Grant Award** by Science and Engineering Research Board (**SERB**), Department of Science and Technology (**DST**), Govt. of India for Participation in Second International Conference held at Strasbourg, France during 6<sup>th</sup> -11<sup>th</sup> March, 2011.

13. **International Travel Grant Award** by Council of Scientific and Industrial Research (CSIR), Govt. of India for Participation in Conferences outside from India (Two Times).
14. **Best Oral Presentation Award** in Indraprastha International Conclave on Nano Science and Technology held during 16<sup>th</sup> -17<sup>th</sup> Nov, 2010 at Guru Gobind Singh Indraprastha University, New Delhi (India).
15. **Gargi Puruskar** by Govt. of Rajasthan for distinctions in 10th Class Board Examination (2000).
16. Sports: **XX National Yoga Championship**, Yoga Federation of India.
17. **Science Fair**: State Level Science Fair, SIERT Udaipur.
18. **Scout Guide**: State Level, Rajasthan Rajya Bharat Scout and Guide Mandal Mukhyalya.

### **Research Publications: Total: 43 (2009-2021)**

(in SCI Journals: 33; Sole Authored: 03; First/Corresponding Authored: 23; Co-Authored: 20)

- Papers published in peer-reviewed referred journals: 35
- Papers published in peer reviewed conference proceedings: 07
- Book chapter published: 01
- **Citations: 1170**; *h-index: 16*; *i10-index: 20* [Last updated on 1<sup>st</sup> February, 2022]

### **Complete List of Publications**

#### **2021**

1. Akash Garg, Miroslav Almáši, Devina Rattan Paul, Ekta Poonia, J. R. Luthra, **Anshu Sharma**\*. Metal Organic Framework MOF-76(Nd): Synthesis, Characterization and Study of Hydrogen Storage and Humidity Sensing. **Frontiers in Energy Research: Hydrogen Storage and Production**. 8(2021) 01-06. [I.F.: 4.008; ISSN: 2296-598X]
2. Miroslav Almasi, **Anshu Sharma**, Tomáš Zelenka. Anionic zinc(II) metal-organic framework post-synthetically modified by alkali-ion exchange: Synthesis, characterization and gas adsorption properties. **Inorganica Chimica Acta**. 526 (2021) 120505. [I.F.: 2.545; ISSN: 0020-1693]
3. Devina Rattan Paul, **Anshu Sharma**\*, Priyanka Panchal, Sudesh Chaudhary, D. Patidar, S. P. Nehra. Effect of ball milling and iron mixing on structural and morphological properties of magnesium for hydrogen storage application. **Materials Today: Proceedings**. 42 (4), (2021) 1673-1677. [I.F.: 0.657; ISSN: 2214-7853]

4. Devina Rattan Paul, Rishabh Sharma, **Anshu Sharma\***, Priyanka Panchal, Anita Singh, Sudesh Chaudhary, S. P. Nehra. Structural properties of Mg-x wt% Co (x = 0, 5, 10 & 20) nanocomposites for hydrogen storage applications. **Materials Today: Proceedings**. 42 (4), (2021) 1713-1717. [I.F.: 0.657; ISSN: 2214-7853]

2020

5. **Anshu Sharma\***. Investigation on Platinum Loaded Multi-Walled Carbon Nanotubes for Hydrogen Storage Applications. **International Journal of Hydrogen Energy**. 45(4), (2020) 2967-2974. [I.F.: 5.816; ISSN: 0360-3199]

6. Devina Rattan Paul, Rishabh Sharma, Priyanka Panchal, S. P. Nehra, A. P. Gupta and **Anshu Sharma\***. Synthesis, characterization and application of silver doped graphitic carbon nitride as photocatalyst towards visible light photocatalytic hydrogen evolution. **International Journal of Hydrogen Energy** 45(44), (2020) 23937-23946. [I. F.: 5.816; ISSN: 0360-3199]

7. **Anshu Sharma\***. Hydrogen Storage in Platinum Loaded Single-Walled Carbon Nanotubes. **International Journal of Hydrogen Energy**. 45(44), (2020) 23960-23970. [I.F.: 5.816; ISSN: 0360-3199]

8. Priyanka Panchal, Devina Rattan Paul, Ritu Malik, **Anshu Sharma\***, Poonam Meena, S. P. Nehra. Biogenic mediated Ag/ZnO nanocomposites for photocatalytic and antibacterial Activities towards Disinfection of Water. **Journal of Colloid and Interface Science**. 563 (2020) 370-380. [I.F.: 8.128; ISSN: 0021-9797]

9. Devina Rattan Paul, Shubham Gautam, Priyanka Panchal, Satya Pal Nehra, Pratibha Choudhary, **Anshu Sharma\***. ZnO Modified g-C<sub>3</sub>N<sub>4</sub>: A Potential Photocatalyst for Environmental Application. **ACS Omega**. 5(8) (2020) 3828-3838. [I.F.: 3.512; ISSN: 2470-1343]

2019

10. Devina Rattan Paul, Rishabh Sharma, S. P. Nehra, **Anshu Sharma\***. Effect of Calcination Temperature, pH and Catalyst Loading on Photodegradation Efficiency of Urea Derived Graphitic Carbon Nitride towards Methylene Blue Dye Solution. **RSC Advances**. 9 (27), (2019) 15381-15391. [I. F.: 3.361; ISSN: 2046-2090]

11. Priyanka Panchal, Devina Rattan Paul, **Anshu Sharma\***, Darshna Hooda, Rashmi Yadav, Poonam Meena, S. P. Nehra. Phytoextract Mediated ZnO/MgO Nanocomposites for Photocatalytic and Antibacterial Activities. **Journal of Photochemistry and Photobiology A: Chemistry**. 385 (2019) 112049-1-10 [I.F.: 4.291; ISSN: 1010-6030]

12. Dinesh Patidar, Anil Yadav, Devina Rattan Paul, Anshu Sharma, S. P. Nehra. Nanohybrids cadmium selenide-reduced graphene oxide for improving photo-degradation of methylene blue. **Physica E: Low-dimensional Systems and Nanostructures**. 114 (2019) 113560-1-9. [I. F.: 3.382; ISSN: 1386-9477]

13. Devina Rattan Paul, Rishabh Sharma, Priyanka Panchal, Ritu Malik, Anshu Sharma, Vijay K. Tomer, S. P. Nehra. Silver Doped Graphitic Carbon Nitride for the Enhanced Photocatalytic Activity towards Organic Dyes. **Journal of Nanoscience and Nanotechnology** 19 (8), (2019) 5241-5248. [I. F.: 1.354; ISSN: 1533-4880]

#### 2018

14. Anshu Sharma\*. Book Chapter: Alignment of Carbon Nanotubes in Polymer Matrix in Book: Carbon-based Polymer Nanocomposites for Environmental and Energy Applications; Publisher: **Elsevier** (2018) 199-215. [ISBN: 978-0-12-813574-7]

15. Anshu Sharma\*, Rossos Andreas, S. P. Nehra. Synthesis of SWNT/Pt nanocomposites for their effective role in hydrogen storage applications. **AIP Conference Proceeding**. 1953 (2018) 030148-1-4. [ISSN: 0094-243X]

#### 2017

16. Ritu Malik, Vijay K. Tomer, Vandna Chaudhary, Manjeet S. Dahiya, Anshu Sharma, S. P. Nehra, Surender Duhan and Kamalakannan Kailasam. An excellent humidity sensor based on In-SnO<sub>2</sub> loaded mesoporous graphitic carbon nitride. **Journal of Materials Chemistry A**. 5 (27), (2017) 14134-14143. [I. F.: 12.732; ISSN: 2050-7488]

#### 2016

17. Anshu Sharma\*, S. P. Nehra, Y. K. Vijay, I. P. Jain. Impact of Magnetically Aligned CNT/PC Nanocomposites for Hydrogen Gas Separation Applications. **MRS Advances**. 1(42) (2016) 2873-2880. [ISSN: 2059-8521]

18. Shilpa Vijay, J. K. Vijayavargiya, Anshu Sharma, and Y. K. Vijay. Electrical, Optical and Doppler Broadening Spectroscopy Studies of Poly Methyl Methacrylates Acid/Multiwalled Carbon Nanotube Nanocomposites. **Journal of Advanced Physics**. 5 (2016) 118-125. [ISSN: 2168-1996]

2015

19. **Anshu Sharma\***, S. P. Nehra, Y. K. Vijay and I. P. Jain. Fast Mass and Charge Transport through Electrically Aligned CNT/Polymer Nanocomposites Membranes. **International Journal of Energy Research**. 40 (2015) 770-775. [I. F.: 5.164; ISSN: 1099-114X]
20. S. P. Nehra, S. Chander, **Anshu Sharma** and M. S. Dhaka. Effect of Thermal Annealing on Physical Properties of Vacuum Evaporated In<sub>2</sub>S<sub>3</sub> Buffer Layer for Eco-Friendly Photovoltaic Applications. **Materials Science in Semiconductor Processing**. 40 (2015) 26-34. [I. F.: 3.927; ISSN: 1369-8001]
21. Anuradha Purohit, S. Chander, **Anshu Sharma**, S. P. Nehra and M. S. Dhaka. Impact of Low Temperature Annealing on Structural, Optical, Electrical and Morphological Properties of ZnO thin films grown by RF Sputtering for Photovoltaic Applications. **Optical Materials**. 49 (2015) 51–58. [I. F.: 3.080; ISSN: 0925-3468]
22. S. Chander, A. Purohit, **Anshu Sharma**, Arvind, S. P. Nehra and M. S. Dhaka. A study on the photovoltaic parameters of mono-crystalline Silicon solar cell with cell temperature. **Energy Reports**. 1 (2015) 104-109. [I. F.: 6.870; ISSN: 2352-4847]
23. Purohit, S. Chander, **Anshu Sharma**, Arvind, S. P. Nehra and M. S. Dhaka. A study on the performance parameters of single crystalline silicon solar cell with irradiance. **Energy and Environment Focus**. 4 (1), (2015) 64-70. [ISSN: 2326-3040]
24. S. Chander, A. Purohit, **Anshu Sharma**, S. P. Nehra and M. S. Dhaka. Impact of temperature on performance of series and parallel connected mono-crystalline silicon solar cells. **Energy Reports**. 1 (2015) 175-180. [I. F.: 6.870; ISSN: 2352-4847]
25. S. Chander, A. Purohit, **Anshu Sharma**, S. P. Nehra and M.S. Dhaka. A study on spectral response and external quantum efficiency of mono-crystalline silicon solar cell. **International Journal of Renewable Energy Research**. 5(1) (2015) 41-44. [I. F.: 3.06; ISSN: 1309-0127]
26. A. Purohit, S. Chander, **Anshu Sharma**, S. P. Nehra, C. Lal and M. S. Dhaka. Effect of annealing on structural and optical properties of thermally evaporated CdSe thin films. **AIP Conference Proceeding**. 1661 (2015) 50009-1-3. [ISSN: 0094-243X]
27. S. Chander, A. Purohit, **Anshu Sharma**, S. P. Nehra, and M. S. Dhaka. Influence of temperature on photovoltaic parameters of mono-crystalline Silicon solar cell. **AIP Conference Proceeding**. 1661 (2015) 50003-1-3. [ISSN: 0094-243X]



## 2014

28. **Anshu Sharma\***, S. K. Singh and Y. K. Vijay. Low Cost Production of Carbon nanotubes using DC Arc discharge under deionized water. **Advance Science Focus**. 2 (2), (2014) 125-129. [ISSN: 2330-0760]
29. S. P. Nehra, M. S. Dhaka, **Anshu Sharma**, N. Kumar, R. Malik and M. Singh. Hydrogen Induced Effect on ZnTe/Co Bilayer Thin Films. **Optoelectronics and Advanced Material-Rapid Communication**. 8(1-2) (2014) 143-148. [I. F.: 0.45; ISSN: 1842-6573]
30. A. Purohit, S. Chander, **Anshu Sharma**, S. P. Nehra, C. Lal and M. S. Dhaka. Effect of thickness on structural and optical properties of CdSe thin films. **AIP Conference Proceeding**. 1665 (2014) 080017-1-3. [ISSN: 0094-243X]
31. S. Chander, A. Purohit, **Anshu Sharma**, S. P. Nehra, and M. S. Dhaka. Performance of single crystalline Silicon solar cell with irradiance. **AIP Conference Proceeding**, 1665 (2014) 120008-1-3. [ISSN: 0094-243X]

## 2013

32. Shilpa Vijay, J. K. Vijayvargiya, **Anshu Sharma** and Y. K. Vijay. Frequency and Composition Dependent Dielectric Properties and A. C. Conductivity of PMMA/MWNT Nanocomposites. **Advanced Science, Engineering and Medicine**. 5 (2013) 1058-1060. [ISSN: 2164-6627]

## 2012

33. **Anshu Sharma\*** and Y. K. Vijay. Effect of Electric Field Variation in Alignment of SWNT/PC Nanocomposites. **International Journal of Hydrogen Energy**. 37 (2012) 3945-3948. [I. F.: 5.816; ISSN: 0360-3199]
34. S. P. Nehra, N. Kumar, **Anshu Sharma**, M. S. Dhaka, M. Singh, Y. Hayashi and Y. K. Vijay. Preparation and Characterization of Structural, Electrical, Optical and Magnetic Properties of Hydrogenated Multilayer ZnO/Mn DMS Thin Films. **Journal of Spintronics and Magnetic Nanomaterials**. 1 (2012) 28-33. [ISSN: 2158-866X]

## 2011

35. **Anshu Sharma\*** and Y. K. Vijay. The Effect of Pressure on the Dimensions of Carbon Nanotubes Obtained by the Chemical Vapour Deposition. **Advanced Science Letters**. 4 (2011) 586-590. [I. F.: 1.253; ISSN: 1936-6612]

36. S. P. Nehra, N. Kumar, **Anshu Sharma**, M. S. Dhaka, M. Singh, Y. Hayashi and Y. K. Vijay. Preparation and Characterization of Electrical, Optical and Magnetic Properties of Hydrogenated Multilayer ZnO/Co Thin films. **Materials Express**. 1(3) (2011) 237-244. [I. F.: 1.650; ISSN: 2158-5849]

2010

37. **Anshu Sharma\***, Balram Tripathi, Y. K. Vijay. Dramatic Improvement in Properties of Magnetically Aligned CNT/polymer Nanocomposites. **Journal of Membrane Science**. 361 (2010), 89-95. [I. F.: 8.742, ISSN: 0376-7388]

38. **Anshu Sharma\*** and Y. K. Vijay. Carbon Nanotubes (CNTs) Low cost Synthesis. **Bulletin of Indian Association of Physics Teachers**. 2 (7) (2010) 205-207. [ISSN: 2277-8950]

39. S. Kumar, **Anshu Sharma**, B. Tripathi, S. Srivastava, S. Agrawal, M. Singh, K. Awasthi, Y. K. Vijay. Enhancement of Hydrogen Gas Permeability in Electrically Aligned MWCNT-PMMA Composite Membranes. **Micron**. 41 (2010) 909-914. [I. F.:2.251; ISSN: 0968-4328]

2009

40. **Anshu Sharma\***, S. Kumar, B. Tripathi, M. Singh, Y. K. Vijay. Aligned CNT/Polymer nanocomposite membranes for hydrogen separation. **International Journal of Hydrogen Energy**. 34 (2009) 3977-3982. [I. F.: 5.816; ISSN: 0360-3199]

41. Balram Tripathi, K. Awasthi, V. Kulshrestha, **Anshu Sharma**, S. Agrawal, S. Kumar, S. S. Sharma, M. Singh, Y. K. Vijay. Optical and Dynamic mechanical Characterization of Thin Film Polymer Nanocomposites. **Modern Physics B**. 14 (1-2) (2009) 57-63. [I. F.: 1.153, ISSN: 0217-9792]

42. **Anshu Sharma\***, S. Kumar, B. Tripathi, M. Singh, Y. K. Vijay. Alignment of MWNT in PC matrix using DC Electric field. Proceeding of 54<sup>th</sup> **DAE Solid State Physics Symposium**. 54 (2009) 897-898. [ISBN: 978-81-8372-054-0]

43. S. Kumar, **Anshu Sharma**, B. Tripathi, S. Srivastava, A. Garg, S. Agrawal, S. S. Sharma, M. Singh, Y. K. Vijay. Role of aligned MWCNT/PMMA composite membrane for hydrogen separation. Proceedings of the 54<sup>th</sup> **DAE Solid State Physics Symposium**. 54 (2009) 851-852. [ISBN: 978-81-8372-054-0]

## **Delivered Talks/Lectures etc: 07**

1. Expert Lecture on the topic “Hydrogen: Fuel of the Future” in National Conference on Recent Advances in Physics organized by Department of Physics, RR College, Alwar, Rajasthan held from 29<sup>th</sup> -30<sup>th</sup> October 2021.
2. Invited talk on the topic "HYDROGEN: A Renewable Energy Perspective" at Centre of Excellence for Energy and Environmental Studies, Deenbandhu Chhotu Ram University of Science & Technology, Murthal during one week online faculty training programme on Multidisciplinary Innovations for Sustainable Development” during 23<sup>rd</sup>- 28<sup>th</sup> August 2021.
3. Resource person lecture on “Nanomaterials for Hydrogen Energy Applications” in the one week online Faculty Development Programme on Emerging Trends in Nanoelectronics (ETNE 2020)" held from 21/09/2020 to 25/09/2020 at “Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur.
4. Expert Lecture on the topic “Hydrogen Energy: Nanomaterials and Applications” Refresher Course on Science organized by Department of Technical Education, Govt. of Rajasthan held on 14<sup>th</sup> August, 2020.
5. Invited Lecture on the topic “Aligned CNT/Polymer Nanocomposites for Charge and Mass Transport Applications” on 26<sup>th</sup> May, 2014 at Department of Chemical and Pharmaceutical Sciences, University of Trieste, Italy.
6. Expert Lecture on the topic “Carbon Nanotubes: The Promising Material for Energy and Environmental Applications” at Department of Chemical Engineering, D. C. R. University of Science and Technology, Murthal, Sonapat, Haryana, India during TEQUIP sponsored Quality Improvement Program on 8<sup>th</sup> Feb, 2017.
7. Resources Person Lecture on “Synthesis and Characterization of Carbon Nanotubes” in a workshop organized under the aegis of IIT Kanpur and Center for Development of Physics Education (CDPE), University of Rajasthan, Jaipur during 24<sup>th</sup> -26<sup>th</sup> Dec, 2010.

## **Papers Presented in Conferences: 15**

### **2019**

1. Research paper entitled “Hydrogen Storage in Platinum Decorated Single -Walled Carbon Nanotubes” was presented in oral mode at International Conference on International Conference on Global Trends & Future Prospectus in Multidisciplinary Research held at Poddar International College, Jaipur during 4<sup>th</sup> -7<sup>th</sup> Feb, 2019.
2. Research paper entitled “Investigation on Pd Loaded MWNTs for Hydrogen Storage Applications” was presented in oral mode at 2<sup>nd</sup> International Conference on Recent Trends on Environment Sustainable Development-2019 held at VGU, Jaipur during 17<sup>th</sup> - 19<sup>th</sup> Oct, 2019.

### **2018**

3. Research paper entitled “Transition Metal Doped Magnesium nanomaterials: The Most Promising Materials for Hydrogen Storage Applications” was presented in oral mode at 1<sup>st</sup> International Conference on Recent Trends on Environment Sustainable Development-2018 held at VGU, Jaipur during 23<sup>rd</sup> -25<sup>th</sup> Feb, 2018.

### **2017**

4. Research paper entitled “Sensor Based on In(III)-SnO<sub>2</sub> Loaded Cubic Mesoporous g-CN” was presented in poster mode at International Conference on Nanotechnology: Ideas, Innovation and Initiatives-2017 held at IIT Roorkee during 6<sup>th</sup> -8<sup>th</sup> Dec, 2017.
5. Research paper entitled “Synthesis of SWNT/Pt Nanocomposites for their Effective Role in Hydrogen Storage Applications” 2<sup>nd</sup> International Conference on Condensed Matter & Applied Physics held at Govt. Engineering College Bikaner, Bikaner during 24<sup>th</sup>-25<sup>th</sup> Nov, 2017.
6. Expert Lecture on the topic “Carbon Nanotubes: The Promising Material for Energy and Environmental Applications” at Department of Chemical Engineering, D. C. R. University of Science and Technology, Murthal, Sonapat, Haryana, India during TEQUIP sponsored Quality Improvement Program on 8<sup>th</sup> Feb, 2017.

### **2016**

7. Research paper entitled "Impact of Magnetically Aligned CNTs in Polymeric Membranes on Charge and Mass Transport Properties for Hydrogen and Fuel Cell Applications" was

presented in oral mode at Materials Research Society Spring Meeting- 2016 held during 28<sup>th</sup> - 1<sup>st</sup>, April, 2016 at Phoenix, Arizona, USA.

8. Research paper entitled “Enhancement in hydrogen storage capacity with carboxylic acid group modified multiwalled carbon nanotubes” was presented in poster mode at 2016 Tech Connect World Innovation Conference held during 22<sup>nd</sup> -25<sup>th</sup> May, 2016, Washington DC, U.S.A.

#### **2014**

9. Invited Lecture on the topic “Aligned CNT/Polymer Nanocomposites for Charge and Mass Transport Applications” on 26<sup>th</sup> May, 2014 at Department of Chemical and Pharmaceutical Sciences, University of Trieste, Italy.

#### **2011**

10. Research paper entitled “Characterization of Electrically Aligned SWNT/PC Nanocomposite Membranes” was presented in poster mode at Second International Conference on Multifunctional, Hybrid and Nanomaterials held during 6<sup>th</sup> -10<sup>th</sup> March, 2011 at Strasbourg, France.

#### **2010**

11. Research paper entitled “Synthesis of CNTs and their alignment in PC matrix for charge and mass transport properties” was presented in oral mode at Indraprastha International Conclave on Nano Science and Technology held at I. P. University, New Delhi, 16<sup>th</sup>-17<sup>th</sup> Nov, 2010.
12. Resources Person Lecture on “Synthesis and Characterization of Carbon Nanotubes” in a workshop organized under the aegis of IIT Kanpur and Center for Development of Physics Education (CDPE), University of Rajasthan, Jaipur during 24<sup>th</sup> -26<sup>th</sup> Dec, 2010.

#### **2009**

13. Research paper entitled “An Electric field assisted alignment of CNTs in Polycarbonate matrix” was presented in poster mode at International Conference on Neutron Scattering and Mesoscopic Systems held in Goa during 12<sup>th</sup> -14<sup>th</sup> Oct, 2009.
14. Research paper entitled “Alignment of MWNT in PC matrix using DC Electric Field” was presented in poster mode at 54<sup>th</sup> DAE Solid State Physics Symposium held at M.S. University of Baroda, Vadodara during 14<sup>th</sup>-18<sup>th</sup> Dec, 2009.

**2008**

15. Research paper entitled “A positron annihilation study of carbon black filled PMMA” was presented in poster mode at 3<sup>rd</sup> International Conference on Electroactive Polymers: Materials and Devices (ICEP-2008) held at Gold Palace, Jaipur on 12<sup>th</sup>-17<sup>th</sup> Oct, 2008.

**International conferences/workshops/school attended outside abroad:07**

1. Second International Conference on Multifunctional, Hybrid and Nanomaterials for presentation the paper entitled “Characterization of Electrically Aligned SWNT/PC Nanocomposite Membranes” during 6<sup>th</sup> -10<sup>th</sup> March, 2011 held at **Strasbourg, France**.
2. Participated in workshop “Materials Challenges in Devices for Fuel Solar Production and Employment” during 19<sup>th</sup> -23<sup>rd</sup> May, 2014 at International Center for Theoretical Physics (**ICTP, Italy**).
3. Materials Research Society Spring Meeting- 2016 for presentation two research papers entitled "Impact of Magnetically Aligned CNTs in Polymeric Membranes on Charge and Mass Transport Properties for Hydrogen and Fuel Cell Applications" and “Characterization of Dye: PCBM Bulk Heterojunction Solar Cells” held during 28<sup>th</sup> - 1<sup>st</sup>, April, 2016 at **Phoenix, Arizona, USA**.
4. 2016 Tech Connect World Innovation Conference for presentation a research paper entitled “Enhancement in hydrogen storage capacity with carboxylic acid group modified multiwalled carbon nanotubes” held during 22<sup>nd</sup> -25<sup>th</sup> May, 2016, **Washington DC, U.S.A**.
5. International workshop GISAXS 2016 during 16<sup>th</sup>-18<sup>th</sup> Nov, 2016, DESY, **Hamburg, Germany**.
6. Max Planck Symposium for Alumni and Early Career Researchers during 31<sup>st</sup> Aug- 3<sup>rd</sup> Sept, 2017, Harnack Haus, **Berlin, Germany**.
7. Max Planck Symposium for Alumni and Early Career Researchers during 19<sup>th</sup> - 23<sup>rd</sup> Sept, 2018, Harnack Haus, **Berlin, Germany**.

### **Professional Trainings/ Dissertations etc:**

1. Faculty Induction Programme organised under the Ministry of Education sponsored Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) scheme during 20<sup>th</sup> December 2021 to 19<sup>th</sup> January 2022 organized by Ramanujan College, University of Delhi.
2. Faculty Training Program on “Recent Trends in Physics of Engineering Material” held from 7/06/2021 to 12/06/2021 organized by Department of Physics, Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Haryana.
3. Faculty Development Program on “Recent Advances in Material Characterization Techniques” held from 15/02/2021 to 19/02/2021 organized by Rajasthan Technical University Kota at Vivekananda Institute of Technology, Jaipur.
4. Course on “Learning Physics Through Simple Experiments” organized by Centre for Continuing Education, Indian Institute of Technology, Roorkee during 02-04-20 to 10-06-20 (Duration: Eight Weeks).
5. Faculty Development Programme on “Quantum and Energy Materials: Potential & Applications” organized by Applied Science Department, NITTTR, Chandigarh during 04-05-20 to 08-05-20 (One Week).
6. Faculty Development Programme on “Nanomaterials and Devices” organized by Applied Science Department, NITTTR, Chandigarh during 11-05-20 to 15-05-20 (One Week).
7. Faculty Development Programme on “Communication and Presentation Skills” organized by Education and Educational Management Department, NITTTR, Chandigarh during 18-05-20 to 22-05-20 (One Week).
8. Refresher course on “Application of Nanoscience in Modern Day Research and Technology” organized by Applied Science Department, NITTTR, Chandigarh during 05-06-2020 to 18-06-2020 (Two Weeks).
9. Science E-Talks Online Conclave, organized by Faculty of Basic and Applied Sciences, Vivekananda Global University Jaipur, during 12-05-20 to 17-05-20 (One Week).
10. Faculty Development Programme on “Thin films and their applications” organized by Applied Science Department, NITTTR, Chandigarh during 22-06-20 to 26-05-20 (One Week).

- 11.** Faculty Development Programme on “Development and Delivery of MOOCs and E-Content” jointly organized by Central University of Haryana, Mahendergarh under the aegis of Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) and IQAC, Deshbandhu College, University of Delhi, New Delhi, from 26th June, 2020 to 1st July 2020.
- 12.** Two days National Workshop on “Hydrogen Energy and Fuel Cells” prospect for building hydrogen-based infrastructure for transport sector and power generation held during 22<sup>nd</sup> -23<sup>rd</sup> Nov, 2017 and conducted by National Institute of Solar Energy, Gurugram, Haryana.
- 13.** One day tutorial course on the topic “Photovoltaic” on 11<sup>th</sup> Dec, 2017 at Indian Institute of Technology Delhi during XIX International Workshop on The Physics of Semiconductor Devices.
- 14.** One week QIP/Short term course on “Application of Solar Energy and Photovoltaics” Centre for Energy Studies, Indian Institute of Technology Delhi during 9<sup>th</sup> -15<sup>th</sup> Dec, 2014.
- 15.** One week Short term course on “Applications of Nanotechnology in Current Scenario” Materials Research Centre, Malaviya National Institute of Technology, Jaipur during 22<sup>nd</sup>- 26<sup>th</sup> Sept, 2014.
- 16.** One week workshop on “Materials Challenges in Devices for Fuel Solar Production and Employment” at International Center for Theoretical Physics (ICTP), Italy organized by ICTP, Italy and UNESCO during 19<sup>th</sup> -23<sup>rd</sup> May, 2014.
- 17.** Three days Training Program on “Entrepreneurship Opportunity in Solar Energy Sector” organized by Center of Excellence for Energy and Environmental Studies, Deenbandhu Chhotu Ram University, Murthal, Haryana during 1<sup>st</sup> -3<sup>rd</sup> Sept, 2016.
- 18.** Two days workshop Experimental Methods in Condensed Matter Physics organized under UGC DSA Programme during 26<sup>th</sup> -27<sup>th</sup> March, 2009 at Department of Physics, University of Rajasthan, Jaipur.
- 19.** IAPT workshop on Revitalizing UG Laboratories held at CDPE, University of Rajasthan, Jaipur during 25<sup>th</sup> -28<sup>th</sup> March, 2010.



20. M.Phil. Dissertation on the topic entitled “Exploratory Study of Am+Be Neutron Source for the ToF Method” at Department of Physics, University of Rajasthan, Jaipur, India (2008).
21. DAE-BRNS “Theme Writing on Ex For Compilation of Nuclear Data” at Bhabha Atomic Research Centre (BARC), Mumbai, India during 29<sup>th</sup> Oct- 2<sup>nd</sup> Nov, 2007.
22. M.Sc. Project on “Temperature to Voltage Converter for Using Instrumentation Amplifier” at Department of Physics, Banasthali Vidyapith, Banasthali, India (2007).
23. Summer Research Project on “Creation of Hollow Cathode Discharge” in summer school program at Institute for Plasma Research (IPR), Gandhi Nagar, India during 5<sup>th</sup> June -14<sup>th</sup> July, 2006.

#### **Memberships of Professional Bodies/Societies:**

1. Life Time Membership of Max Planck Alumni Association (MPAA).
2. Member of Materials Research Society (MRS) 2016.
3. Life Time Membership of Indian Association of Physics Teacher (IAPT).
4. Life Time Membership of Indian Physics Association (IPA).
5. Life Time Membership of Materials Research Society of India (MRSI).

#### **Extra Co-curricular Activities:**

1. Sports: XX national Yoga Championship, Yoga Federation of India.
2. Science fair: State Level Science Fair, SIERT Udaipur.
3. Scout Guide: State Level, Rajasthan Rajya Bharat Scout & Guide Mandal Mukhyalya.

#### **Scientific Reviewer of International Journals:**

Nano-Micro Letters; Applied Materials Today; International Journal of Hydrogen Energy; Materials Science and Engineering B; Journal of Environmental Chemical Engineering ; Applied Nanoscience; International Journal of Photoenergy; Materials Science in Semiconductor Processing; Current Nanomaterials; Research on Chemical Intermediates; Journal of Inorganic and Organometallic Polymers and Materials; Composites Part B; Ceramics International; Chemical Papers; Current Alternative Energy etc.

**Academic Editor:** Public Library of Science (PLOS) ONE (IF:3.24)

**Other Responsibilities:** Member of University's Science, Mathematics and Technology (SMT) Club, Member DRC.

**Research Guidance:**

- Ph.D. student guidance: ongoing - 03
- M.Sc. projects guidance: completed: 10

**Research Collaboration: International/ National/ Intra-Department:**

1. Department of Inorganic Chemistry, P. J. Safarik University, Moyzesova, Kosice, Slovak Republic
2. Max Planck Institute for Intelligent Systems, Stuttgart, Germany
3. Max Planck Institute for Structure and Dynamics of Matter, Hamburg, Germany
4. Microelectronics Research Center, Iowa State University Ames, Iowa, USA
5. Center for Polymer and Organic Solids, Department of Chemistry and Biochemistry, University of California at Santa Barbara, California, USA
6. Department of Physics & Center for Non-Conventional Energy Resources, University of Rajasthan, Jaipur, Rajasthan
7. Department of Physics, Mohan Lal Sukhadia University, Udaipur, Rajasthan
8. Centre of Excellence for Energy and Environmental Studies, Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Sonapat, Haryana

Date: **1<sup>st</sup> February, 2022**

**(Dr. ANSHU)**