

Dr. Kavita

Designation: Assistant Professor

Specialization: Material science, Nanoscience.

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Education

M.Sc. Physics (2006, Barkatullah University, Bhopal),

Ph.D. (May, 2014, Punjabi University, Patiala)

Title of Ph. D Thesis: “Effects of capping agents on morphological and optical behavior of ZnO nanostructures”.

Professional Experience:

Department of Physics M.M. Modi College, Patiala, India (15 July, 2014 to till date)

Department of Physics M.M.U., Mullana Ambala, India (September 2008 to October 2010)

Department of Physics Guru Gobind Singh College of Modern Technology Kharar, (Pb.) India (October 2006 to September 2008)

Teaching Interests:

- Electricity & Magnetism
- Quantum Mechanics

Research Interest:

- Nanoscience & Technology, Antimicrobial Activity

Publications

1. Kavita, Karamjit Singh, Sunil Kumar, H. S. Bhatti (2013). Structural and Optical Characterization of Hydroxy-propyl Methyl Cellulose Capped ZnO Nanorods. *J. Mater. Sci.*, **48**, 5536-5542. <https://link.springer.com/article/10.1007/s10853-013-7348-z>
2. H. S. Bhatti, Karamjit Singh, Kavita, Sunil Kumar, R. K. Chaubey (2014). Photo-Physical Studies of Pyridine Capped ZnO Nanostructures”, *Russ. J. of Phys. Chem. A.*, **88**, 1166-1171. <https://link.springer.com/article/10.1134/S0036024414070048>
3. Kavita, Karamjit Singh, Sunil Kumar, H. S. Bhatti (2014). Glutathione-Assisted Synthesis of Star-Shaped Zinc Oxide Nanostructures and Its Photoluminescence Behavior”, *J. Lumin.* **149**, 112-117. <https://www.sciencedirect.com/science/article/abs/pii/S0022231314000040>

4. D. Kumar, Kavita, K. Singh, V. Verma, H. S. Bhatti (2014). Investigation of Pristine and Functionalized Single-Walled Carbon Nanohorns for Phosphor Applications Digest Journal of Nanomaterials and Biostructures **9** (4), 1713-1727.
http://www.chalcogen.ro/1713_Kumar.pdf
5. Dinesh Kumar, Kavita, Karamjit Singh, Veena Verma, H. S. Bhatti (2015). Microwave Assisted Synthesis and Characterization of Silver Nanowires by Polyol Process *Applied Nanoscience*, **5**, 881-890. <https://link.springer.com/article/10.1007/s13204-014-0386-2>
6. Dinesh Kumar, Kavita, Karamjit Singh, Veena Verma, H. S. Bhatti (2016). Synthesis and characterization of water soluble carbon nanotubes *Journal of Nanoscience and Technology* **1**(2), 64-65.
<https://www.jacsdirectory.com/journal-of-nanoscience-and-technology/articleview.php?id=16>
7. Dinesh Kumar, Kavita Bhardwaj, Veena Verma, Karamjit Singh & HS Bhatti, (2016). Nanoindentation and VSM of Silver Nanowires Synthesized by Microwave-Polyol Process, *J Nanomater Mol Nanotechnol* **5**, 1-5.
www.scitechnol.com/ArchiveJNMN/jnmn-archive.php?month=February&year=2016&journal=JNMN
8. Kavita, Dinesh Kumar, Karamjit Singh, Veena Verma, H. S. Bhatti 2016. Photoluminescent properties of SPAN-80 coated intrinsic and extrinsic ZnO nanostructures *Physica E: Low-dimensional Systems and Nanostructures* **79**, 188-197.
<https://www.sciencedirect.com/science/article/pii/S1386947715303295>
9. Sunil Kumar, Kavita, HS Bhatti, Karamjit Singh, Saurabh Gupta, Swati Sharma, Vijay Kumar, RaviKant Choubey 2021. Effect of glutathione capping on the antibacterial activity of tin doped ZnO nanoparticles *Phys. Scr.* **96**, 125807
<https://iopscience.iop.org/article/10.1088/1402-4896/ac1eb3/meta>

Articles in Books

1. Semiconductor Nanostructures and Synthesis Techniques, Kavita & Pooja Rani Current and Future Developments in Nanomaterials, 2023, Vol. 4, 1-28 Synthesis and

Applications of Semiconductor Nanostructures” Edited by Karamjit Singh Dhaliwal, ISBN (Print): 978-981-5080-12-4

2. Opening and Manipulating the Gap in Graphene, Pooja Rani; Kavita Research Highlights in Science and Technology Vol. 1, 22 April 2023, Page 24-44, ISBN 978-81-19217-18-2 (Print)
3. Carbon emissions and footprints -International Collaboration, Pooja Rani Environmental Issues: Causes and Resolutions, Dec., 2022 ISBN/ISSN:978-93-954567-9-1, Redshine Publication, India.

Conference / Seminars

A) Paper presented:

1. Synthesis and Characterization of Capped II-VI Ceramic Semiconductor Nanoparticles. National conference on nanoscience Fundamentals & Applications, Jul. 23-24, 2011, Chitkara University Rajpura, Pb.
2. Synthesis and Analysis of Eu³⁺ Doped II-VI Ceramic Semiconductor Nanoparticles. 6th National Conference on Thermodynamics of Chemical and Biological Systems, Nov. 2-4, 2011, Maharishi Dayanand University Rohtak, Hry.
3. Synthesis and Characterization of Hydroxy-Propyl-Methyl- Cellulose (HPMC) Capped ZnO nanoparticles. International Conference on Advances in Materials and Materials Processing, Dec. 9-11, 2011, IIT. Kharagpur, WB.
4. Synthesis and characterization of capped II-VI extrinsic ceramic semiconductor nanoparticles. International Conference on Current Developments in Atomic, Molecular, Optical and Nano Physics with applications, Dec. 14-16, 2011, Delhi University, New Delhi.
5. Optical Characterization of Chemically grown ZnO Nanoparticles. International Conference on Nanaomaterials, NanoSci Tech, Feb. 15-18, 2011, Panjab University, Chandigarh.
6. Synthesis and Characterization of ZnO Nanocrystals. International Conference and Workshop on Nanostructured Ceramics and other Nanomaterials, Mar.13-16, 2012, Delhi University, New Delhi.
7. Photo-Physical studies of Bio-compatible ZnO nanostructures. International Conference on Emerging Trends in Physics for Environmental Monitoring and Management, Dec. 17-19, 2012, Punjabi university. Patiala, Pb.
8. Synthesis and Characterization of II-VI Semiconductor Nanostructures. National Conference on Recent Advances in Chemical, Biological & Environmental Sciences, Feb. 19-20, 2016, MM Modi College, Patiala, Pb.

9. Semiconductor nanocrystals and quantum confinement. National Conference on Recent Advances in Chemical, Biological & Environmental Sciences, April 11-12, 2019, MM Modi College, Patiala, Pb.
10. A Comparative Analysis of Crystallography and Morphology of Various Surfactant Coated ZnO Nanostructures. National conference Dec 22nd, 2022) Department of Shri Shivayogi Murughendra Swamiji Arts, Science and Commerce College, Athani, Belagavi, Karnataka.
11. Exploring ZnO tetrapods and Their Applications. 11th National conference on “Recent Advances on “Chemical, Biological and Environmental Sciences (RACES-2023) on 12 April, 2023.
12. Inevitability of values in Education National Seminar on Higher Education in India: A Road Map for Future Generations at Asian Group of Colleges, Patiala (January 20, 2024).
13. Green Synthesis of Zinc Oxide Nanoparticles toward highly efficient Photocatalysis Applications. National Conference (AEMTA)-2024, organized by SLIET (Longowal) on 15 March, 2024.

B) Attended Workshops and Short Term training Courses

1. Entrepreneurship Innovation and Incubation at M.M. Engineering College, Mullana, Ambala (Haryana) dated on 27th January to 31st January 2009.
2. One day workshop on Rain water harvesting M.M. Engineering College, Mullana, Ambala(Haryana) dated on 5th June 2009.
3. MMIDE-IGNOU-Workshop on Development of Self Learning Study Materials 31st July to 2nd August,2009 organized by M. M. Institute of Distance Education, Mullana-Ambala in collaboration with STAFF TRAINING & RESEARCH INSTITUTE OF DISTANCE EDUCATION, IGNOU, NEW DELHI.
4. Teacher’s Training Workshop on Analytical Skills at M.M. Engineering College, Mullana, Ambala (Haryana) dated on 31st May to 4th June 2010.
5. Innovation & Creativity Development in Teachers and Students, conducted by MEDIA CENTRE at NITTTTR, Chandigarh dated on 7th June to 11th June 2010.
6. Workshop on Computer Interfaced Science Experiments for Physics Teachers & Engineers at Khalsa College Patiala, Dec 22nd 2017.
7. Shock Waves in Science, Engineering & Medicine. International Workshop on Feb. 23rd-24th 2018, held at Post Graduate College for Girls, Sector-11, Chandigarh.
8. Faculty Development Program on Contemporary Issues in Higher Education held at MM Modi College Patiala, July 20th -26th 2018.

9. Completed "Advanced Course on Special Theory of Relativity" from Centre for continuing education, IIT Kanpur from January 26 to May 19, 2020.
10. Post COVID Challenges Before Indian Education System. International Webinar held at MM Modi College Patiala, May 29, 2020
11. Completed the course "Learning Physics through Simple Experiments" from Centre for continuing education, IIT Kanpur from April 2 to June 10.
12. Participated in one day International virtual conference on Novel Corona and Novel Challenges: Life Ahead with Covid-19 organized by Sri Guru Gobind Singh College, Chandigarh (June 03, 2020).
13. Completed a 4-Week Induction/ Orientation Programme for Faculty in Universities/ Colleges/ Institutes of Higher Education organized by Ramanujan College, University of Delhi (June 4- July 1, 2020).
14. Completed a 2-Week online faculty development programme on "Advanced Concepts for Developing MOOCS" organized by Teaching Learning Centre (TLC), Ramanujan College in association with Research Development and Services Cell, Ramanujan College, University of Delhi (July 2-17, 2020)
15. Participated in the National Webinar on International Yoga Day organized by Gargi College under the aegis of IQAC, University of Delhi (June 21, 2020)
16. Attended One Week Faculty Development Program on Advancements in Science and its Applications in Engineering organized by Department of Science & Humanities, Hyderabad Institute of Technology & Management, Hyderabad (June 22-26, 2020).
17. Participated in Science Leadership Workshop organized by Central University of Punjab, Bathinda (June 22-28, 2020).
18. Participated in International Virtual Conference on Advanced Materials for Energy and Environmental Applications (ICAMEEA-2020) organized at International Relationship Centre, Bharathidasan University, Tiruchirappalli, Tamil Nadu (June 26-27, 2020).
19. Participated in Webinar on Nanotechnology: A Multidisciplinary Technology of 21st Century organized by Department of Physics, S.D. College, Barnala (July 10, 2020).
20. Participated in One day National Webinar on " The social and religious context of the martyrdom of Sri Guru Teg Bahadur Ji" organized by Multani Mal Modi College Patiala (July 16, 2020).
21. Attended National Webinar on Frontiers of Science & Technology in Defense organized by PG Department of Physics, Khalsa College, Patiala (August 07, 2020).
22. Participated in One Day Capacity Building Program on Basic Tools and Techniques for Online Teaching organized by Punjabi University, Patiala (August 09, 2020).
23. Participated in the course Classical Electromagnetism-I by Centre for continuing Education, IIT Kanpur (August 15-Dec 13, 2020).
24. Attended One day National Webinar on the theme Hind di Chadar : Sri Guru Teg Bahadur organized by Punjabi University, Patiala (August 26, 2020).
25. Participated in National Webinar on Recent Advances in Material Sciences and Nano-Technology organized by Department of Physics, Ch. Chhotu Ram (P.G.) College, Muzaffarnagar, Uttar Pradesh (October 01, 2020).

26. Attended Five Day Online Lecture Series organized by P.G Department of Physics, Khalsa College, Patiala (Dec 22-26, 2020).
27. Completed course on Classical Mechanics-I by Centre for continuing Education, IIT Kanpur (Jan 26-April 25, 2021).
28. Attended and Participated in the 7-Days Virtual National Level Capacity Building Programme on “Integration of Pedagogy & Technology in Teaching-Learning” organized by Multani Mal Modi College, Patiala (July 13-19, 2021).
29. Attended National Webinar on “Intellectual Property Rights (IPRs)” organized by Human Resource Development Centre, S. L. Bawa DAV College, Batala, Punjab (July 28, 2021).
30. Attended webinar on “Virtual Labs” organized at Punjabi University Patiala through Online Mode on 17-04-2023
31. Attended a 10-day workshop on “30 Hours Sanskrit Speaking Certificate Course” held from 30-10-2023 to 10-11-2023 organized by Multani Mal Modi College, Patiala in Collaboration with Central Sanskrit University, Delhi.
32. Attended NEP 2020 Orientation & Sensitization Programme under” Malviya Mission Teacher Training Programme’of University Grants Commission Organized by Punjabi University, Patiala held from 5thFeb-14th Feb., 2024.

Invited Talks

Invited talk on the topic “The story of Photoelectric Effect” Govt College for Girls Patiala.

Achievements, Awards and Recognitions

- Awarded research fellowship under UGC-SAP program for meritorious students in Science.