

Dr. Jaspal Singh



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Education

Thapar University, Patiala, Punjab (INDIA) 2010-2014

PhD

Guru Nanak Dev University, Amritsar, Punjab (INDIA) 2006-2008

M.Sc First class

Punjab University, Chandigarh, (INDIA) 2004-2006

B.Sc First class

Research & supervising experience

- Awarded Junior and subsequently Senior research fellow under DRDO research project 2010-2013
- Supervise three MSc students for their Master's dissertation work 2017-2020
- Two PhD students successfully defended their final viva-voce for PhD degree in November-2022 and May-2023
- Established R & D lab in the department with the help of University and UGC, Govt of India, New Delhi. Presently, the lab has facilities like High temperature Furnace, Pelletizer, Chemicals, P-E loop tracer, Dielectric measurement setup etc. 2016-2023
- Expertise in handling research related software like origin, crystal impact (match), curve fitting, MS office and data files etc. 2010-2023
- Expertise in handling instruments like UV-visible spectrometer, P-E loop tracer, LCR meter, high temperature furnaces, pelletizer and other research related equipment's for experimental work. 2010-2023
- Laboratory demonstrator to postgraduate & undergraduate students of physics. 2012-Present

Research projects completed/ongoing

University Grants Commission (UGC), Delhi, India

2017-2020

UGC-BSR (Start Up Research Grant) of worth Rs. 10 lakhs (13,000 US dollars) to establish R & D lab in the Department of Physics, Punjabi University, Patiala-147 002, Punjab (INDIA)

Awarded with prestigious **Teacher Associateship for Research Excellence** scheme for three years from 05/December/2022 onwards by Science & Engineering Research Board (SERB), Department of Science & Technology, Govt. of India in collaboration with Institute of Science & Technology, Mohali, Punjab, India under the mentorship of Dr. Dipankar Madal, Scientist-E

Publications

1. M. Singh, **J. Singh**, and S. Kumar, *An observation of multiferroism in (1-x)BCZT-xNZFO-based 3-0 type composites*. Journal of Bulletin of Materials Science (Springer) 46, no. 3 (2023): 136.
2. K. Kulwinder, and **J. Singh**. "Structural, ferroelectric, ferromagnetic and magnetodielectric properties of lead free $K_{0.5}Na_{0.5}NbO_3-Ni_{0.5}Zn_{0.5}Fe_2O_4$ based composites." Materials Today: Proceedings (2023), Elsevier.
3. M. Singh, **J. Singh**, M. Kumar, and S. Kumar, "Strain mediated magnetoelectric coupling response in $Ba_{0.85}Ca_{0.15}Ti_{0.9}Zr_{0.1}O_3-CoFe_{1.95}Mg_{0.05}O_4$ particulate multiferroic composites", Journal of Materials Science: Materials in Electronics (Springer) 33, no. 17 (2022): 14264-14280.
4. M. Singh, **J. Singh**, M. Kumar, and S. Kumar, "Investigations on multiferroic properties of lead free (1-x)BCZT-xCZFM O based particulate ceramic composites", Solid State Sciences (Elsevier): 108 (2020) 106380.
5. K. Kaur, M. Singh, **J. Singh**, J. and S. Kumar, "Multiferroic and magnetodielectric properties of (1-x) KNN-x CMgFO ceramic-based composites", Journal of Asian Ceramic Societies (Taylor & Francis): 8 (2020) 1027-1035.
6. K. Kaur, M. Singh, J. Singh, and S. Kumar, "The modified magnetodielectric response in KNN-CZFM O based particulate multiferroic composite system". Journal of Advanced Dielectrics (World scientific): 10 (2020) 2050024.
7. **J. Singh**, A. Vasishth, N.K. Verma, "Multiferroic properties of $Zn_{1-x}Mg_xO$ nanoparticles", Journal of Superconductivity and Novel Magnetism (Springer): 28 (2015) 3069-3074.

8. **J. Singh**, N.K. Verma, "Correlation between Structure and Ferromagnetism in Cobalt-Doped CdSe Nanorods", Journal of Superconductivity and Novel Magnetism (Springer): 27 (2014) 2371-2377.
9. J. Singh, S. Kumar, N.K. Verma, "Effect of Ni-doping concentration on structural, optical and magnetic properties of CdSe nanorods", Journal of Material Science in Semiconductor Processing (Elsevier): 26 (2014) 1-6.
10. **J. Singh**, N. K. Verma, "Structural, optical and magnetic properties of cobalt-doped CdSe nanoparticles", Journal of Bulletin of Materials Science (Springer): 37 (2014) 1-7.
11. **J. Singh**, S. Kumar, N.K. Verma, "Enhancement of room temperature ferromagnetism in $Cd_{1-x}Ni_xSe$ nanoparticles", Journal of Materials Science: Materials in Electronics (Springer): 25 (2014) 2267-2272.
12. **J. Singh**, N.K. Verma, "Ferromagnetism in Fe-doped CdSe nanorods prepared by solvothermal route", Journal of Materials Science: Materials in Electronics (Springer): 24 (2013) 4464-4470.
13. **J. Singh**, N. K. Verma, "Synthesis and characterization of Fe-Doped CdSe nanoparticles as dilute magnetic semiconductor", Journal of Superconductivity and Novel Magnetism (Springer): 25 (2012) 2425-2430.

Publications in conference proceedings:

1. **J. Singh**, N.K. Verma, "Surfactant induced phase control of CdSe nanoparticles", AIP Conference Proceedings: 1536 (2013) 43-44.
2. **J. Singh**, P.S. Gill, A. Vashihth, and N.K. Verma, "Room temperature ferromagnetism in Mg-doped ZnO nanoparticles". In AIP Conference Proceedings: 1665 (2015) 050192.
3. K. Singh, L. Garg, **J. Singh**, S. Kumar, and A. L. Sharma. "Structural, thermal and electrical characterizations of multiwalled carbon nanotubes and polyaniline composite." In AIP Conference Proceedings: 1728 (2016) 020392.

Conferences / Presentations

1. Attended Indo-Australian Symposium on multifunctional Nanomaterials, Nanostructure and Applications (MNNA-2006), Delhi University. (**Attended**)
2. **J. Singh** and N. K. Verma, "Room temperature ferromagnetism behavior of Cr doped CdSe nanoparticles" Proceedings of national conference on Recent Advances in Polymer Nanocomposites, held at Department of Physics, Zakir Hussain College, University of Delhi, New Delhi on January 14-15, 2011, p 55. (**Presented paper**)

3. **J. Singh** and N. K. Verma, "Optical and magnetic properties of cobalt doped CdSe dilute magnetic nanoparticles", 4th Bangalore nano conference, December 8-9, 2011, Organized by JNCASR, pp 84. **(Presented poster)**
4. **J. Singh** and N. K. Verma, "Magnetic study of Fe doped CdSe nanoparticles", 23rd Annual general meeting, Materials research society of India (MRSI), February 13-15, 2012, Organized by Thapar University, Patiala, pp 64. **(Presented poster)**
5. **J. Singh** and N. K. Verma, "Structural, optical and magnetic study of Fe doped CdSe nanoparticles", (ICWNCN) International conference and workshop on nanostructures ceramics & other nanomaterials, March, 13-16, 2012, Organized by Delhi University (DU), Delhi, India, pp 437. **(Presented poster)**
6. **J. Singh**, N. K. Verma, "Surfactant induced phase control of CdSe nanoparticles." Recent Trends In Applied Physics & Materials Science (RAM 2013), 1-3, February 2013, Bikaner, pp-26. **(Presented poster)**
7. **J. Singh**, N.K.Verma, " Structural, optical and magnetic properties of transition metal doped CdSe nanorods." 6th national symposium for material research scholars, May, 13-14, 2014, Organized by department of metallurgical engineering & materials science, IIT Bombay, India, pp 91. **(Presented poster)**
8. **J Singh**, A. Vasishth, N.K.Verma, " Room Temperature Ferromagnetism in Mg-Doped ZnO Nanoparticles ." 59th Department of Atomic Energy- Solid State Physics Symposium (DAE-SSPS), VIT University, Vellore, Tamilnadu, during December 16-20, 2014. **(Oral presentation)**
9. M. Singh, **J. Singh**, and S. Kumar, 23rd Punjab Science Congress on "*Emerging trends in Science and Technology for Sustainable Development*" held at Sant Longowal Institute of Engineering and Technology, Longowal (Sangrur) from 7-9 February, 2020.
10. M. Singh, **J. Singh**, and S. Kumar, "*6th International conference on Nanoscience and Nanotechnology*" organized by Department of Physics and Nanotechnology, SRM Institute of Science and Technology, India during February 03-01, 2021.

Workshop/Faculty development programme/Orientation/Seminar

- Attended "*One day workshop on advanced characterization techniques*", May, 12, 2014, organized by department of metallurgical engineering & materials science, IIT Bombay, India.

- Participated in Faculty Orientation Programme "*Technology Oriented Outcome Based Teaching Learning Process*" for one week (01/July/2015 to 07/July/2015) at Chandigarh University, Gharuan, Punjab, India.
- Attended Faculty Development Programme "*Achieving Excellence in Applied Physics*" for one week (07/July/2015 to 14/July/2015) at Chandigarh University, Gharuan, Punjab, India.
- Coordinated "*National Seminar on Photonics & its Applications*" held on 23rd April, 2015 at Department of Applied Sciences, Chandigarh University, Gharuan-140413.
- Participated in "*Two-day Online Capacity Building Program*" conducted by Centre for E-Learning and Teaching Excellence, Punjabi University, Patiala during 25th-26th July, 2020.
- Attended the "*45th Faculty Inducation Programme*" conducted by the UGC-Human Resource Development Centre, Punjabi University, Patiala - 147 002 during 3rd to 31st, October, 2020.
- Participated in "*19th Refresher Course in Physical Sciences & Nano Sciences*" being organized by HRDC Jawaharlal Nehru University, Delhi during 10th to 22nd January, 2022.

Teaching experience

1. School of Physics & Materials Science, Thapar University, Patiala, India

Teaching associateship 22-07-2013 to 31-12-2013

Teaching associateship 06-01-2014 to 30-06-2014

The 8-9 hr per week load has been given which includes; practical labs, tutorial classes, to conduct exams, evaluation of answer sheets, exam duties etc.

2. Department of Applied Sciences, Chandigarh University, Gharuan-140413, India

Assistant Professor of Physics 23-07-2014 to 01-04-2016

Performed the duties of academics, research and administrative work.

3. Department of Physics, Punjabi University, Patiala-147002, India

Assistant Professor of Physics 07-04-2016 to till date

Performing the duties of academics, research and administrative work.

Subjects Taught: *Basic Applied Physics, Condensed Matter Physics-I, Condensed Matter Physics-II, Introduction to Nanoscience & Technology, Electronic Communication Systems, Electronics, Characterization Techniques, Carbon Nanotubes.*

2014-till date

Administrative Experience

- Member Academic Council of Department of Physics Punjabi University, Patiala
- Member admission counselling committee of Department of Physics Punjabi University, Patiala
- Liaison officer for website of Department of Physics Punjabi University, Patiala
- Liaison officer for statistical cell of Department of Physics Punjabi University, Patiala
- External paper setter for internal & external institutions
- Conducted viva-voca as external expert for laboratory in internal & external institutions
- Examination related duties like paper evaluation and marks uploading etc.
- Member of syllabus committee, purchase and other administrative work in the Department of Physics Punjabi University, Patiala
- Acted as superintendent of examination for internal and external of Multi-Disciplinary Five Year Integrated B.Sc-M.Sc Programme (MD-FYIP) in Physical and Chemical Sciences (Major: Physics/Chemistry), Semestor-II during the August 2022 to January 2023

Professional Recognition/ Award/ Prize/ Certificate, Fellowship

DRDO sponsored project, School of Physics & Materials Science (SPMS), Thapar University, Patiala (PUNJAB)

Junior Research Fellow (JRF) 2010-2012

Senior Research Fellow (SRF) 2012-2013

Qualified GATE examination 2009

Reviewers of many national & international journals 2012-2023



(Dr. Jaspal Singh)