# Curriculum Vitae


## Dr. Vishal Singh

**Assistant Professor**

**Department of NanoSciences and Materials, Central University Jammu**

Rahya – Suchani (Bagla), District- Samba- 181143, ( J & K ) India.

| Title | Dr | First Name | VISHAL | Last Name | SINGH | Photograph |
|---|---|---|---|---|---|---|
| Designation | | Assistant Professor | | | |  |
| Address | | **Department of NanoSciences & Materials, Central University-Jammu, Main campus Rahyaa Suchani, District: Samba, UT-J&K, India** | | | | |
| Phone No Office | | | | | | |
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## Educational Qualifications

| Degree | Institution | Year |
|---|---|---|
| PhD | Department of Physics, University of Jammu | 2011 |
| M.Phil | Department of Physics, University of Jammu | 2005 |
| PG | Department of Physics, HNB Garhwal University | 2002 |

## Career Profile

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|---|---|---|
| Lecturer | Post Graduate Department of Physics, University of Jammu | 2011-2012 |
| Assistant Professor | Mahant Bachiter Singh College of Engineering-Jammu | 2012-2016 |
| Assistant Professor | Department of NanoSciences & Materials, Central University-Jammu | 2016 (onwards) |

## Administrative assignments

- Coordinator, Department of Nanosciences & Materials
- Member board of study of Nanosciences & Materials
- Member board of study of Physics and Astronomical Science
- Member board of school of basic and applied science
- Member admission committee
- Member technical committee
- Member department research committee
- Member Local Purchase committee
- Member Games & Support committee

## Research interest/specialization

- Nanostructured materials, Piezoelectric and Multiferroic thin films/ceramics for energy harvesting applications
- Thermoelectric properties of nanostructured composites
- Semiconductor sensors for gas/chemical
- Preparation and characterization of single crystals
- Magnetism at the Nanoscale, multifunctional properties of magnetic oxides
- Electronic and sensing properties of graphene oxide, reduced graphene oxides

## Subjects Taught

### M.Sc (Material Science and Technology)

- **Semester I:** Crystal Structures and Properties of Materials
- **Semester II:** Thermal Behavior of Materials
- **Semester II:** Nanomaterials
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- **Semester III:** Advances in Crystal Growths
- **Semester IV:** Composite Materials
- **PhD course:** Materials characterization

**Research Guidance**

i. Ms. Vaishali Misra (Join in august-2020)

ii. Manisha Yadav (Join in 2020)

**PG Dissertations Supervised (15)**

| S. No | Roll. No | Name of the student | Title of the Dissertation | Academic session |
|---|---|---|---|---|
| 1 | 0701816 | Mr. Rohit Kumar | Fabrication and characterization of organic photodiode | 2016-2018 |
| 2 | 1801816 | Mr. Manjeet Singh | Fabrication and characterization of organic light emitting diodes | 2016-2018 |
| 3 | 0601817 | Ms. Ankita Sharma | Synthesis And Structural Characterization Of Multiferroic Bismuth Manganite ($BiMnO_3$) Nanoparticles By Using Chemical Co-Precipitation Method | 2017-2019 |
| 4 | 1101817 | Mr. Digvijay Partap Singh | Synthesis, Structural And Electrical Properties of Bismuth Manganite ($BiMnO_3$) Nanoparticles By Auto Combustion Method | 2017-2019 |
| 5 | 0301418 | Ms. Shoba Devi | Electron Paramagnetic Resonance Study On Lanthanum Doped ($Bi_{0.5}La_{0.5}MnO_3$) Bismuth Manganite By Chemical Co-Precipitation Method | 2018-2020 |
| 6 | 0501418 | Mr. Shubam Singh Slathia | To Study The Ferroelectric Properties Of Lanthanum Doped ($Bi_{0.5}La_{0.5}MnO_3$) Bismuth Manganite By Combustion Method | 2018-2020 |
| 7 | 0401419 | Ms. Monika Sharma | Simulution study on p-type and n-type materials for energy efficiency analysis of thermoelectric generator | 2019-2021 |
| 8 | 1001419 | Ms. Neha Badkulia | Perovskite manganite nanostructures material; applications, present status and future scope | 2019-2021 |
| 9 | 1101419 | Ms. Kajal Devi | A review on synthesis and characterization of nanostructured materials and their application in sensors | 2019-2021 |

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| 10 | 1401419 | Ms. Rashmi Sharma | Brief report on lead free multiferroic materials; applications, present and future scope | 2019-2021 |
| 11 | 1801419 | Ms. Sonali Sharma | Optimization of thermoelectric generator system through simulation | 2019-2021 |
| 12 | 0301420 | Mr. Alok Kumar | Sol-gel synthesis, structural and optical characterization of reduced graphene oxide based nanocomposite of cobalt ferrite | 2020-2022 |
| 13 | 0901420 | Ms. Meenakshi Sharama | Synthesis, structural and microstructural studies on nanocomposite of reduced graphene oxide based metal oxide semiconductor | 2020-2022 |
| 14 | 17532030030 Cluster University | Mr. Kashav Sharma | Synthesis and characterization of Eu and Mn Co-doped Batio3 perovskite materials | 2020-2022 |
| 15 | 17532030032 Cluster University | Ms. Umanshu Sharma | Synthesis, Structural and morphological Studies of Mn doped Znfe2O4 ferrites using solid state reaction Method | 2020-2022 |

**Research Projects (Major Grants/Research Collaboration)**

| Grant agency | Title of the project | Duration of the project | Amount in Lakh | Status |
|---|---|---|---|---|
| CU Jammu | Development of bio-metal organic framework (BMOFs) as a novel multipurpose capturing system for natural/ hazardous/fuel gases | 2017-2019 | 5 | completed |
| UGC | Development of multiferroic thin films for spintronic applications | 2017-2020 | 10 | completed |
| DRDO | Sensor for Detection of Nitro and Peroxide-Based Explosives | 2020-2023 | 110.05 | ongoing |

**Publications:**

**List of Best SCI Publications**

i. K. K. Bamzai, **Vishal Singh**, Nidhi, P. N. Kotru, B. M. Wanklyn, "Micromechanical Characteristics of Flux Grown $SmAlO_3$ Single Crystal", Strength of Material, 42 (2010) 387-395. : ISSN: 0039-2316 (print version) 1573-9325 (electronic version).

ii. K. K. Bamzai, **Vishal Singh**, Nidhi, P. N. Kotru, B. M. Wanklyn, Dielectric Anisotropy of Flux Grown 1% Samarium Doped Gadolinium Vanadate (Sm: $GdVO_4$)", Ferroelectrics, 392 (2009) 55-70. (*ISSN*: 0015-0193).

iii. K. K. Bamzai, **Vishal Singh,** Nidhi, P. N. Kotru, B. M. Wanklyn, "Microhardness and Fracture Mechanics of Flux Grown Samarium Doped Gadolinium Vanadate (Sm: $GdVO_4$)", Journal of Physics and Chemistry of Solids 71 (2010) (1428-1434).

iv. **Vishal Singh**, K. K. Bamzai, Nidhi, Shivani Suri, "Microstructural, Thermal and Dielectric Characteristics of Yttrium Modified Lead Titanate Ceramics" Integrated Ferroelectrics, 116 (2010) 82-100. (*ISSN*: 1058-4587).

v. **Vishal Singh,** K. K. Bamzai, Shivani Suri, Nidhi, "Preparation, Structural and Electrical Characterization of Praseodymium Modified Lead Titanate", Journal of Ceramic International, 37 (2011) 2655-2662 (ISSN: 0272-8842).

vi. Shivani Suri, K. K. Bamzai, **Vishal Singh**, "Growth and Thermal Kinetics of Pure and Cadmium Doped Barium Phosphate Single Crystal", Journal of Thermal Analysis & Calorimetry, 105 (2011) 229–238. (ISSN: 1388-6150).

vii. Shivani Suri, K. K. Bamzai, **Vishal Singh**, "Dielectric and Ac Conductivity Studies on Pure and Doped Cadmium Doped Barium Phosphate Crystals", Journal of Ferroelectrics, 423 (2011) 94-104. (*ISSN*: 0015-0193).

viii. Shivani Suri, K. K. Bamzai, **Vishal Singh**, "Synthesis, Characterization, Thermal and Dielectric Properties of Pure and Cadmium Doped Calcium Hydrogen Phosphate", Journal of Material Chemistry and Physics, 135(2012)158-167. (ISSN: 0254-0584).

ix. Ajay Singh, **Vishal Singh**, K. K. Bamzai, "Structural and magnetic studies on $xPbTiO_3$-(1-x) $SrFe_{12}O_{19}$ composite multiferrioc" Material Chemistry and Physics, 2015, 1-7, (ISSN: 0254-0584), http://dx.doi.org/10.1016/j.matchemphy.2015.02.004

x. A Singh, S Suri, P Kumar, B Kaur, AK Thakur, **V Singh,** "Effect of temperature and frequency on electrical properties of composite multiferroic of lead titanate and strontium hexaferrite (PbTiO3 –SrFe12O19", Alloys and compounds 764 599-615, **(2018)** (https://doi.org/10.1016/j.jallcom.2018.0),

xi. Bharat Singh, Naresh Kumar, **Vishal Singh**, Ravender Tickoo, N. K. Gaur & Ajay Singh, Structural and Magnetic Investigations of Yb Substituted $Y_{1-x}Yb_xBaCo_4O_7$

(0 ≤ x ≤ 0.5) Compound, J. of Integrated Ferroelectrics, 203 **(2019)** 97 – 107

xii. Ajay Singh, Balwinder Kaur, Manju Arora, **Vishal Singh** "Effect of PbTiO3 Concentration on Structural, Paramagnetic Resonance and Magnetoelectric properties of PbTiO3:SrFe12O19 Multiferroic Nanocomposites*",* J. of Materials Chemistry and Physics, 258 **(2021)** 123849, https://doi.org/10.1016/j.matchemphy.2020.123849

xiii. *Ajay Singh[1]* ***Vishal Singh[2]*** *Balwinder Kaur[3] Anju Kumari[4]*,Room Temperature Enhancement of Magnetoelectric Coupling in Multiferroic Nanocomposite of PbTiO3—SrFe12O19, Journal of Superconductivity and Novel Magnetism, 36 **(2022)** 249-261, https://doi.org/10.1007/s10948-022-06462-8

xiv. ***Vishal Singh*** *[a,*]*, Arun Banotra [a], Saleem Khan [a], Ajay Singh [b], Seema Goutam [c]* ,Pristine SnO2 and SnO2/rGO nanocomposites: Synthesis, microstructural, optical and electrical characteristics for potential sensing applications, Diamond & Related Materials 133 **(2023)** 109704, https://doi.org/10.1016/j.diamond.2023.109704

xv. *Vaishali Misra[1],Saleem Khan[1], Uvais Valiyaneerilakkal[2], Ajay Singh[3], and* ***Vishal Singh[1],**** Effect on structural, morphological, electrical and optical properties of GdMnO3 nanoparticles induced by bismuth substitution, Journal of Materials Science: Materials in Electronics volume, 34, 501 **(2023),** https://doi.org/10.1007/s10854-022-09695-4

**Book Chapter Published**

**i.** Nanomaterial Composite Based Nanofiber Membrane: Synthesis to Functionalization for Wastewater Purification, *Saleem Khan, Vaishali Misra, Ajay Singh, and* ***Vishal Singh****, Recent Trends in Wastewater Treatment* (Springer Nature) 315-340, **2022**, ISBN 978-3-030-99857-8, https://doi.org/10.1007/978-3-030-99858-5

**ii**. Recent Advances in Porous Carbon-Based Inorganic Flexible Sensor Journey from Material Synthesis to Sensor Prototyping, *Saleem Khan,* ***Vishal Singh****, and Ajay Singh, Materials Horizons: From Nature to Nanomaterials* (Springer Nature) *423-446,* ***2023****,* ISSN 2524-5384; ISBN 978-981-

19-7187-7, https://doi.org/10.1007/978-981-19-7188-4

iii. Recent Advances in Graphene Oxide-Ferrite Hybrid Framework as Radar Absorbing Material, *Ajay Singh, Sunil Sambyal, and* ***Vishal Singh****, Recent Advances in Graphene Nanophotonics (Springer Nature Switzerland AG), https://doi.org/10.1007/978-3-031-28942-2_12*

**Organization of Workshops/Seminars**

**As organizing secretary**

- National conference on materials for sustainable development and new technology (MSDNT-2017), April 28-29th, 2017, Department of Nanosciences & Materials, Central University Jammu, India
- International workshop on soft materials and devices (IWSMD-2018), March 21-25th, 2018, Department of Nanosciences & Materials, Central University, Jammu, India
- International Conference on Materials for Sustainable Development (ICMSD-2022) Oct 18, 2022 - Oct 19, 2022, Department of Nanosciences & Materials, Central University Jammu, India

**List of Invited Talks**

| Title of Talk | Seminars/ Conferences/Workshop |
|---|---|
| i. Electrical and magnetic behaviour of praseodymium modified lead titanate. | MAT-2017, Feb. 20-21, 2017, DIT Dehrdun |
| ii. How does detailed balance limit of open-circuit voltage of polymer fullerene solar cells changes with temperature? | MSDNT-2017, Central University Jammu |
| iii. Multiferrioc a futuristic material for device application. | IWSMD-2018, Central University Jammu |

**Paper presentation in national/international seminars/ conferences/workshop: Total twenty**
**List of five paper presentation**

i. **Vishal Singh,** Balwinder Kaur, Vineeta Gupta, Sanjay Kumar, P. N .Kotru, B. M. Wanklyn, K. K. Bamzai, "Mechanical behaviour of samarium aluminate crystal by Vicker's hardness tester". International Symposium for Research Scholars on Metallurgy, Materials Science & Engineering, Dept. of Metallurgical and Materials Engineering, IIT Madras Dec 18-20, 2006

ii. **Vishal Singh,** K. K. Bamzai, Shivani Suri and Nidhi, "XRD, SEM and Thermal Studies on Yttrium doped Lead Titanate prepared by solid State Reaction technique", National Symposium for

Materials Research Scholars (MR-09), Department of Metallurgical Engineering and Material Science IIT Bombay, Mumbai, May 7 – 9, 2009, Abstract # PPC-7, pp.139.

iii. **Vishal Singh**, K. K. Bamzai, Shivani Suri "Ferroelectric and Piezoelectric Behaviour of Pr Doped Lead Titanate" 5th International Conference on Electroceramics (ICE-2011), School of Material Science and Metallurgy, University of New South Wales, Sydney, Australia, 12-16 Dec, 2011 Abstract A11

iv. **Vishal Singh**, K. K. Bamzai, Shivani Suri, "Preparation, characterization and dielectric study of rare earth modified lead titanate nano-particles" Department of Physics and Astrophysics, International Conference and workshop on Nanostructured ceramics and workshop (ICWNCN-2012) Delhi University, 13-16 March, 2012.

v. Ajay Singh Dadwal, Sukhdeep Singh,**Vishal Singh** "Effect of Quantum Confinement and Surface Morphology on Enhancement of Magnetoelectric Coupling Coefficient of Multiferroic Nanocomposite of PbTiO3-SrFe12O19", "International Conference on Nanoscience and Nanotechnology (ICONN-2019)" at SRM University, Chennai, India, January 28 - 30, 2019, *Abstract No. 1733*

**Fellowships awarded**

i. Senior Research Fellowship (SRF) from Defence Research and Development organization (DRDO), New Delhi from Sep.2007 to April 2010.

**ii.** Fellowship for attending International Conference (ICE-2011) in Australia from Department of Science and Technology (DST), New Delhi.

**iii.** Fellowship by Hungarian Academy of Sciences for attending 7th Central European Training School on Neutron Diffraction (CETS-13) at Wigner Research Centre for Physics, Budapest, Hungary

**Association with professional bodies**

i. Material Research Society of India (MRSI) – Life member (LMB – 1941)

**ii.** Indian Association of Solid State Chemistry & Allied Science – Life member

**iii.** Electron microscopy Society of India (EMSI)-– Life member

**Vishal Singh**