

Megha Vagadia

Assistant Professor, Department of Physics

Saurashtra University, Rajkot, India

meghavagadia@gmail.com | meghavagadia@sauuni.ac.in

+91-7678-029-528 | [Google Scholar](#) | [Webpage](#)



1. Current Position

Assistant Professor, Department of Physics, Saurashtra University, Rajkot (April 2023 – Present)

Leading independent research on spin-orbit coupled oxide heterostructures, magnetic transport phenomena, and quantum materials.

Research Interests

- Antiferromagnetic Spintronics
- Spin-Orbit Coupled based oxide systems
- Topological Transport Phenomena such as anomalous Hall effect, topological Hall effect
- Interface Engineering, Oxide Thin Films and Heterostructures
- Probing of quasiparticle phenomena in quantum materials using neutron diffraction

2. Education

- Ph.D. in Materials Science, Saurashtra University, India (2009–2014)
Thesis: Studies on some new functional oxides | Advisor: Prof. D.G. Kuberkar
- M.Phil. in Physics, Saurashtra University, India (2008–2009)
- M.Sc. in Physics, Saurashtra University, India (2006–2008, with distinction)
- B.Sc. in Physics, Saurashtra University, India (2003–2006, with distinction)

3. Professional positions

- DST INSPIRE Faculty: IISER Bhopal (2018–2023)
- Post-doctoral Fellow: Tata Institute of Fundamental Research (TIFR), Mumbai (2014–2017)

4. Research Grants (as Principal Investigator | Total Extramural Funding: ~₹2.04 Crore)

1. CSIR ASPIRE Grant (2024–2027) - ₹25 Lakhs | CSIR, New Delhi
2. ANRF PM ECRG Grant (2023–2026) - ₹72 Lakhs | ANRF, New Delhi
3. UGC-DAE CSR CRS Project (2024) - ₹1.35 Lakhs | UGC-DAE CSR, Mumbai
4. DST INSPIRE Faculty (2018-2023) - ₹107 Lakhs | DST, New Delhi

5. Courses taught, and other services provided to students

6. Synchrotron and Neutron Beamline Experience

- ANSTO, Sydney (2016) – Neutron powder diffraction, **Principal Investigator**
- INDUS-1, India (2012) – Photoemission studies (XPS, RPES)
- IUAC, New Delhi (2012) – High-energy swift heavy ion irradiation

7. Professional honors, awards, and fellowships

- Junior Research Fellowship-UGC- Major Research Project at Department of Physics, Saurashtra University (2011-2012)
- Senior Research Fellowship-CSIR, New Delhi (2012-2014)
- National Post-Doctoral Fellowship – SERB, New Delhi (2017) (Not Availed)
- DST INSPIRE Faculty Award, DST, New Delhi (2018–2023)

8. Membership and Professional Activities

- Member, Neutron Scattering Society of India (NSSI)
- BS-MS Thesis Supervision – 05
- Ph.D. Supervision – 02 (Ongoing)
- Reviewer for Physical Review B, Journal of Magnetism and Magnetic Materials, Applied Physics A, Materials Letters
- Member, Organizing Committee, National Assembly of Researchers in Physics (NARIPHY 2022)- IISER Bhopal
- Member, Organizing Committee of various Schools, Workshops and Conferences held at Saurashtra University, Rajkot
 - National Workshop on XRD (2010),
 - National Workshop on Functional Oxides, Nanomaterials and Devices (2012),
 - 8th International Conference on Nanostructuring by Ion Beams (ICNIB-2025),
 - National workshop on “Research & Development in Sciences: Future Perspective” (2026)
- Coordinator of remedial coaching in Department of Physics, Saurashtra University, Rajkot
- No. of conferences attended/participated - 30
- No. of Invited Talks/Contributory Talk/Oral presentation -08

9. Community service

- Given a series of talk under the initiative of “Taking Quantum to Society” at Regional Science Centre, Rajkot (2025)
- Given a Webinar on "Exotic world of low temperatures!" for an Online activity-based learning programme under Rashtriya Avishkar Abhiyan (RAA), Rajya Shiksha Kendra for the students of 6th to 8th class jointly organized by Centre for Science and Society (CS²), IISER Bhopal (2021)
- Participated in Outreach activities in TIFR, Mumbai

Advanced Functional Materials, e76416 (2026)

- 2) Role of Surface Modification and Defect Formation on the Resistive Switching Behavior of BiFeO₃-Based Heterostructures by Dense Electronic Excitation

Sumana Hajra, Urjitsinh I Rathod, Devanshi Karavadra, Mukesh Ranjan, Vanaraj Solanki, Jayaprakash Sahoo, Sajjan Yadav, **Megha Vagadia**, Ramcharan Meena, Sunil Ojha, Savan Katba, Ashish Ravalia

ACS Applied Electronic Materials, 8 (8), 3670-3683(2026).

- 3) Role of crystal structure and local electronic structure on the magnetic behaviour of DyMn_{1-x}Fe_xO₃ (x= 0.0, 0.3, 0.5, 0.7, and 1.0) system

Urjitsinh Rathod, Sumana Hajra, Sadaf Jethva, Savan Katba, **Megha Vagadia**, Rajashri Urkude, RJ Choudhary, M Gupta, Ashish Ravalia

Journal of Alloys and Compounds 1040, 183667 (2025)

- 4) Terahertz crystal-field transitions and quasi ferromagnetic magnon excitations in a noncollinear magnet for hybrid spin-wave computation

Gaurav Dubey, Brijesh Singh Mehra, Sanjeev Kumar, Ayyappan Shyam, Karan Datt Sharma, **Megha Vagadia**, D. S. Rana

ACS Appl. Mater. Inter., 16, 43, 58791 (2024).

- 5) Role of competing magnetic anisotropies in deriving topologically nontrivial spin textures in oxide heterostructures

Jayaprakash Sahoo, **Megha Vagadia**, René Hübner, Neeraj Bhatt, Ankit Kumar, Ganesh Sahastrabudhe, Ram Janay Choudhary, Ravi Shankar Singh, DS Rana

Physical Review B, 110, 104422 (2024). [Equal first author]

- 6) Modification of the electrical Properties of a Bi_{0.8}Ca_{0.2}FeO₃/LaNiO₃/LaAlO₃ heterostructure: Effect of 80 MeV O⁷⁺ ion irradiation

Sumana Hajra, P. Josely Jose, Urjitsinh I. Rathod, Mukesh Keshvani, Jayaprakash Sahoo, **Megha Vagadia**, R. Meena, S. Ojha and Ashish Ravalia

J. Electronic Materials, 53, 5062 (2024).

- 7) Exploring anisotropic phases and spin transport in perovskite heterostructures: Insights into 3d/5d interfaces for antiferromagnetic spintronics

S. Sardar, **Megha Vagadia**, T. M. Tank, J. Sahoo, and D. S. Rana

Journal of Applied Physics, 135, 80701 (2024)

- 8) Particle size-dependent structural and magnetic properties of Pr_{0.6-x}Bi_xSr_{0.4}MnO₃ (x = 0.10 and 0.25)

Anita D. Souza, Jayaprakash Sahoo, **Megha Vagadia**, Sudhindra Rayaprol, Lozil Denzil Mendonca & Mamatha D. Daivajna

Journal of Materials Sci.: Materials in Electronics, 34, 1901 (2023).

- 9) Influence of Bi³⁺ substitution on the structural and magnetic properties of Pr_{0.6}Sr_{0.4}MnO₃ ceramics

Anita D Souza, **Megha Vagadia**, Sujay Chakravarty, Jayaprakash Sahoo, Ram J Choudhary, Sudhindra Rayaprol, Mamatha D Daivajna

Journal of Magnetism and Magnetic Materials, 576, 170692 (2023).

- 10) Rashba spin-orbit coupling induced modulation of magnetic anisotropy in canted antiferromagnetic heterostructures

Megha Vagadia, Jaya Prakash Sahoo, Ankit Kumar, Suman Sardar, Tejas Tank, and D.S. Rana

Physical Review B (Letter), 105, L020402 (2022).

- 13) Effect of nanoscale size reduction on the magnetic properties of $\text{Pr}_{0.6}\text{Sr}_{0.4}\text{MnO}_3$

Anita D Souza, **Megha Vagadia** and Mamatha Daivajna

Journal of Magnetism and Magnetic Materials, 538, 168280 (2021). [Co-corresponding author]

- 14) Finite-size effects on the evolution of magnetic correlations and magnetocaloric properties of $\text{Pr}_{0.4}\text{Bi}_{0.2}\text{Sr}_{0.4}\text{MnO}_3$

Anita D Souza, **Megha Vagadia** and Mamatha Daivajna

Applied Physics A, 127, 677 (2021). [Co-corresponding author]

- 15) Tuning magnetic and magnetocaloric properties of $\text{Pr}_{0.6}\text{Sr}_{0.4}\text{MnO}_3$ through size modifications

Anita D Souza, **Megha Vagadia** and Mamatha Daivajna

Journal of Materials Sci.: Materials in Electronics, 32, 14990 (2021). [Co-corresponding author]

- 16) Disorder and epitaxial strain control of metamagnetic transition, large saturation magnetization, and magnetoterahertz properties of $\text{YMn}_{0.5}\text{Cr}_{0.5}\text{O}_3$ polycrystals and thin films

Megha Vagadia, G.L. Prajapati, Tannu Kartikeyan, Aswitha Othayoth and D.S. Rana

Journal of Applied Physics, 129, 153902 (2021).

- 17) Effect of La-substitution on magnetic properties of ErFeO_3 orthoferrites

Savan Katba, Sadaf Jethva, **Megha Vagadia**, Ashish Ravalia and D.G. Kuberkar

Journal of Magnetism and Magnetic Materials, 154, 167170 (2020).

- 18) THz electrodynamics in transition metal oxides

K. Santhosh Kumar, Gulloo Lal Prajapati, Rahul Dagar, **Megha Vagadia**, D.S. Rana and M. Tonouchi

Advanced optical materials, 8, 1900958 (2019).

- 19) Unusual electronic properties of a low-temperature phase of Ag_4SSe

Shidaling Matteppanavar, Nguyen Hai An Bui, Srinivasan Ramakrishnan, **Megha Vagadia**, Arumugam Thamizhavel, Arpita Paul, Umesh V Waghmare, Andreas Schnleber, Sander van Smaalen

Physical Review Materials, 2, 113606 (2018).

- 20) Electronic excitation induced modifications in the ferroelectric polarization of BiFeO_3 thin films

Ashish Ravalia, Bharat Kataria, Savan Katba, Sadaf Jethva, **Megha Vagadia**, K. Asokan, Sanjeev Gautam, Keun Hwa Chae and D.G. Kuberkar

Vacuum, 155, 572 (2018).

- 21) Evidence for reentrant spin glass behavior in transition metal substituted Co-Ga alloys near critical concentration

Sk. Mohammad Yasin, V.Srinivas, S. Kasiviswanathan, **Megha Vagadia**, A.K. Nigam

Journal of Magnetism and Magnetic Materials, 451, 327 (2018).

- 22) Influence of Mn-substitution on magnetic and thermal properties of TbCrO_3

Megha Vagadia, S. Ravanrol and A.K. Nigam

Applied Surface Sciences, 423, 100 (2017).

- 25) Studies on the structure and dielectric properties of Ca-doped BiFeO₃ multiferroics

Sadaf Jethva, Savan Katba, Malay Udeshi, Brinda Vyas, Hetal Kundalia, Priyanka Trivedi, **Megha Vagadia** and D. G. Kuberkar

Ferroelectrics, 516, 106 (2017).

- 26) Resistive switching and magnetic behavior of Bi_{0.8}Ba_{0.2}FeO₃/SrRuO₃/SrTiO₃ films: role of thickness-dependent strain

Megha Vagadia, Ashish Ravalia, Priyanka Trivedi, Sadaf Jethva, Savan Katba and D.G. Kuberkar

Journal of Physics D: Applied Physics, 49, 185302 (2016).

- 27) Modifications in the electronic structure of rare-earth doped BiFeO₃ multiferroic

Priyanka Trivedi, Savan Katba, Sadaf Jethva, Malay Udeshi, Brinda Vyas, **Megha Vagadia**, S Gautam, KH Chae, K Asokan, DG Kuberkar

Solid state communications, 222, 5 (2015).

- 28) Role of strain and nanoscale defects in modifying the multiferroicity in nanostructured BiFeO₃ films

Ashish Ravalia, **Megha Vagadia**, P.S. Solanki, K. Asokan, D.G. Kuberkar

Journal of Experimental Nanoscience, 10, 1057 (2015).

- 29) Electroresistance and field effect studies on manganite based heterostructure

Piyush Solanki, Uma Khachar, Megha Vagadia, Ashish Ravalia, Savan Katba, and D. G. Kuberkar

Journal of Applied Physics, 117, 145306 (2015).

- 30) Modifications in device characteristics of La_{0.6}Pr_{0.2}Sr_{0.2}MnO₃/SrNb_{0.002}Ti_{0.998}O₃ manganites by swift heavy ion irradiation

AB Ravalia, **Megha Vagadia**, PG Trivedi, PS Solanki, PS Vachhani, RJ Choudhary, DM Phase, K Asokan, NA Shah, DG Kuberkar

Indian Journal of Physics, 89, 137 (2015).

- 31) Role of defects in BiFeO₃ multiferroic films and their local electronic structure by X-ray absorption spectroscopy

Ashish Ravalia, **Megha Vagadia**, P.S. Solanki, S. Gautam, K.H. Chae, K. Asokan, N.A. Shah, D.G. Kuberkar

Journal of Applied Physics, 116, 153701 (2014).

- 32) Co-substitution induced electronic structure modifications in Zn_{1-x}Co_xO

Megha Vagadia, Ashish Ravalia, Savan Katba, P.S. Solanki, Komal Bapna, Manish Kumar, R.J. Choudhary, D.M. Phase, D.G. Kuberkar

Journal of Alloys and Compounds, 610, 113 (2014).

- 33) Electrical properties of BaTiO₃ based MFIS heterostructure: Role of semiconductor channel carrier concentration

Megha Vagadia, Ashish Ravalia, P.S. Solanki, Parul Pandey, K. Asokan, D.G. Kuberkar

36) Swift Heavy Ion Irradiation Studies on the Transport in $\text{La}_{0.8-x}\text{Pr}_{0.2}\text{Sr}_x\text{MnO}_3$ Manganite Films

Ashish Ravalia, **Megha Vagadia**, Priyanka Trivedi, MJ Keshvani, Uma Khachar, BT Savalia, PS Solanki, K Asokan, DG Kuberkar

Advanced Materials Research, 665, 63 (2013).

37) Role of strain and microstructure in chemical solution deposited $\text{La}_{0.7}\text{Pb}_{0.3}\text{MnO}_3$ manganite films: thickness dependent swift heavy ions irradiation studies

Bharat Kataria, PS Solanki, Uma Khachar, **Megha Vagadia**, Ashish Ravalia, MJ Keshvani, Priyanka Trivedi, D Venkateshwarlu, V Ganesan, K Asokan, NA Shah, DG Kuberkar

Radiation Physics and Chemistry, 85, 173 (2013).

38) Grain morphology and size disorder effect on the transport and magnetotransport in sol–gel grown nanostructured manganites

D.G. Kuberkar, RR Doshi, PS Solanki, Uma Khachar, **Megha Vagadia**, Ashish Ravalia, V Ganesan

Applied Surface Sciences, 258, 9041 (2012).

39) 200 MeV Ag^{15+} ion induced surface modification and transport behaviour in manganite based thin film devices

Ashish Ravalia, **Megha Vagadia**, PS Vachhani, RJ Choudhary, DM Phase, K Asokan, DG Kuberkar

Applied Surface Sciences, 258, 4203 (2012).

40) Size and grain morphology dependent magnetic behavior of Co doped ZnO

Megha Vagadia, Ashish Ravalia, Uma Khachar, P.S. Solanki, R.R. Doshi, S. Rayaprol, D.G. Kuberkar

Materials Research Bulletin, 46, 1933 (2011).

