

Dr. Babusona Sarkar

Assistant Professor
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Current Position

Assistant Professor in Physics at Sri Ramkrishna Sarada Vidya Mahapitha (Govt. Aided general degree college affiliated to The University of Burdwan), Hooghly, West Bengal (05th April, 2017 to till date)

Academic Information

- Doctoral Degree: Ph.D. (2015) in Science from Department of Material Science, Indian Association for the Cultivation of Science, Degree awarded from Jadavpur University, India.
- Post Graduate: M. Sc. (2010) in Physics with specialization in X-ray & Crystallography, Department of Physics, University of Burdwan, India.
- Undergraduate: B. Sc. (2008) in Physics (Hons.), Department of Physics, Sri Ramkrishna Sarada Vidya Mahapitha, University of Burdwan, India.

Research Experience

- Aug 2016 – Apr 2017: Post Doctoral Fellow
UGC-DAE Consortium for Scientific Research, Kolkata Centre,
funded by Science and Engineering Research Board (SERB) through
National Post Doctoral Fellowship (NPDF). Title: Multiferroic
properties of spin-spiral systems
- Oct 2012 – Aug 2016: Senior Research Fellow,
Indian Association for the Cultivation of Science, India
- Oct 2010 – Oct 2012: Junior Research Fellow,
Indian Association for the Cultivation of Science, India

Awards and Achievements

1. Awarded by **Science and Engineering Research Board (SERB)**, Govt. of India through **National Post Doctoral Fellowship (NPDF) 2016**.
2. Qualified **National Eligibility Test (NET)** for **Junior Research Fellowship (JRF)** conducted jointly by **University Grant Commission and Council of Scientific and Industrial Research (CSIR)**, (2009 and 2011)
3. Qualified **Joint Entrance Screening Test (JEST)**, (2010)

List of Publications

1. “Magnetic and dielectric properties of Eu-doped BiFeO₃ nanoparticles by acetic acid-assisted sol-gel method”
Kaushik Chakrabarti, Kajari Das, **Babusona Sarkar** and S. K. De, *Journal of Applied Physics* **110**, 103905 (2011)
2. “Optical and ferroelectric properties of ruthenium-doped BaTiO₃ nanocubes”
Babusona Sarkar, Kaushik Chakrabarti, Kajari Das and S. K. De., *Journal of Physics D: Applied Physics*, **45**, 505304 (2012)
3. “Enhanced magnetic and dielectric properties of Eu and Co co-doped BiFeO₃ nanoparticles”
Kaushik Chakrabarti, Kajari Das, **Babusona Sarkar**, Sirshendu Ghosh, S. K. De, Godhuli Sinha and J. Lahtinen, *Applied Physics Letters* **101**, 042401 (2012)
4. “Temperature induced magnetization reversal in SrRuO₃”
Babusona Sarkar, Biswajit Dalal and S. K. De, *Applied Physics Letters*, **103**, 252403 (2013)
5. “Interfacial magnetism and exchange coupling in BiFeO₃-CuO nanocomposite”
Kaushik Chakrabarti, **Babusona Sarkar**, Vishal Dev Ashok, Kajari Das, Sheli Sinha Chaudhuri and S. K. De, *Nanotechnology*, **24**, 505711 (2013)
6. “Exchange bias effect in BiFeO₃-NiO nanocomposite”
Kaushik Chakrabarti, **Babusona Sarkar**, Vishal Dev Ashok, Kajari Das, Sheli Sinha Chaudhuri, Amitava Mitra and S. K. De, *Journal of Applied Physics*, **115**, 013906 (2014)
7. “Magnetic properties of mixed spinel BaTiO₃-NiFe₂O₄ composites”
Babusona Sarkar, Biswajit Dalal, Vishal Dev Ashok, Kaushik Chakrabarti, Amitava Mitra and S. K. De, *Journal of Applied Physics*, **115**, 123908 (2014)
8. “Electrical conductivity spectra of Sn doped BaTi_{0.95}Zr_{0.05}O₃”
Biswajit Dalal, **Babusona Sarkar** and S. K. De, *Journal of Applied Physics* **115**, 203713 (2014)
9. “Magnetic and magnetocaloric properties of Ba and Ti co-doped SrRuO₃”
Babusona Sarkar, Biswajit Dalal, Vishal Dev Ashok and S. K. De, *Journal of Applied Physics*, **116**, 243903 (2014)
10. “Enhanced magnetic and dielectric behavior in Co doped BiFeO₃ nanoparticles”
Kaushik Chakrabarti, **Babusona Sarkar**, Vishal Dev Ashok, Sheli Sinha Chaudhuri and S. K. De, *Journal of Magnetism and Magnetic Materials*, **381**, 271 (2015)
11. “Correlation among disorder, electronic and magnetic phases of SrRuO₃”
Babusona Sarkar, Biswajit Dalal and S. K. De, *Journal of Physics: Condensed Matter*, **27**, 116002 (2015)
12. “Structural, electric and magnetic properties of La_{1-x}Sr_xCo_{1-x}Ru_xO₃ (0 ≤ x ≤ 0.6) solid solution”
Biswajit Dalal, **Babusona Sarkar**, Vishal Dev Ashok and S. K. De, *Journal of Alloys and Compounds*, **649**, 1164 (2015)
13. “Itinerant to localized electronic behavior in phase segregated ruthenates”
Biswajit Dalal, **Babusona Sarkar** and S. K. De, *Journal of Alloys and Compounds*, **667**, 248 (2016)
14. “Large exchange bias effect in LaCr_{0.9}Ru_{0.1}O₃”

- Babusona Sarkar**, Biswajit Dalal and S. K. De, *Journal of Magnetism and Magnetic Materials*, **417**, 160 (2016)
15. “Evolution of magnetic properties and exchange interactions in Ru doped YbCrO_3 ”
B Dalal, **B Sarkar**, VD Ashok, SK De, *Journal of Physics: Condensed Matter* **28**, 426001 (2016)
 16. “Multisolitons in SRR-based meta-materials in klein-gordon lattices”
AK Bandyopadhyay, B Sarkar, S Das, M Laskar, A Ghosal, *Computational Chemistry Methodology in Structural Biology and Materials Sciences*
 17. “Effect of Gd and Cr substitution on the structural, electronic and magnetic phases of SrRuO_3 : a case study of doping and chemical phase separation”
B Dalal, **B Sarkar**, SK De, *Journal of Physics: Condensed Matter*, **29**, 495803 (2017)
 18. “Magnetization reversal, exchange interaction, and switching behavior studies on Ru doped GdCrO_3 ”
B Dalal, **B Sarkar**, VD Ashok, SK De, *Journal of Alloys and Compounds*, **739**, 418 (2018)
 19. “Unveiling ferrimagnetic ground state, anomalous behavior of the exchange-bias field around spin reorientation, and magnetoelectric coupling in $\text{YbCr}_{1-x}\text{Fe}_x\text{O}_3$ ($0.1 \leq x \leq 0.6$)”
B Dalal, **B Sarkar**, S Rayaprol, M Das, V Siruguri, P Mandal, SK De, *Physical Review B* **101**, 144418 (2020)

Google Scholar h-index=11

Google Scholar i10-index=12

Google Scholar ID:

https://scholar.google.co.in/citations?hl=en&user=oqxE4PcAAAAJ&view_op=list_works

Posters/Oral/Papers presented in National / International seminars / conferences / workshop

1. “Temperature induced magnetization reversal in SrRuO_3 ” by **Babusona Sarkar**, Biswajit Dalal and S. K. De in the “*2nd International conference on Advanced Functional Materials (ICAFM-2014)*” during 19th -21st February, 2014 at CSIR-NIIST, Thiruvananthapuram, Kerala, India. (**Poster Presentation**)
2. “Magnetic properties of Ba and Ti co-doped SrRuO_3 ” by **Babusona Sarkar**, Biswajit Dalal and S. K. De in the “*CMDAYS14*” during 27th-29th, Aug 2014 at Center for Research in Nanoscience and Nanotechnology, University of Calcutta, Kolkata, India. (**Poster Presentation**)
3. “Magnetic Properties of SrRuO_3 and LaCrO_3 ” by **B. Sarkar**, B. Dalal and S. K. De in the “*International Conference on Advanced Materials and Energy Technology*” during 17th - 19th December, 2014 at Indian Institute of Engineering Science and Technology (IEST), Shibpur, India. (**Oral Presentation**)

4. “Effect of phase segregation on transport and magnetic properties of SrRuO_3 ” by **Babusona Sarkar**, Biswajit Dalal and S. K. De in the “*CMDAYS15*” during 27th-29th, Aug 2015 at Department of Physics, Visva-Bharati, Santiniketan, India. (**Poster Presentation**)

Research Interest

- Details structural analysis by Rietveld refinement of ternary oxide materials
- Pair distribution function analysis using diffraction data
- EXAFS analysis for local structure determination
- Multiferroicity
- Spin driven ferroelectricity
- Exchange bias and Negative magnetization
- Magnetocaloric effect
- Transport and Magnetotransport