



Dr. Shyam Babu

Asst. Prof., HoD, Physics



14 Feb 1992



RHS PG College, Singrauli,
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About me

An Independent and self-motivated professional with excellent research and communication skills, enthusiasm to learn new things and always try to do my best in any work assigned and always tries to be appreciated as well-performer.

Skills

Sputtering (DC, RF, Magnetron)

Float Zone Furnace

X-Ray-Diffraction

Electron Diffraction (SEM, TEM)

MPMS (SQUID)

Atomic Force Microscopy

Neutron Diffractin (SANS)

Synchrotron (XAS, XMCD, XRMS)

C Language

Software: Origin, Igor, CrystBox

Latex, Microsoft Office

Education

2016 - 2021

(Completed) Ph.D. Materials Science & Technology SMST, IIT (BHU), Varanasi
Specialization: Energy-efficient magnetic materials for spintronics
Advisor: Prof. Dr. Shrawan Kumar Mishra

2013-2015

(Completed) M.Sc. Physics University of Allahabad, Allahabad
Specialization: Atomic and Molecular Spectroscopy
Advisor: Prof. Dr. Kailash Narayan Uttam

2010-2013

(Completed) B.Sc. Physics University of Allahabad, Allahabad
Subjects: Math, Physics, Computer Maint.
Advisor: Prof. Dr. Raja Ram Yadav

Achievements (National Level Exams Qualified)

2018

JEST qualified in Physics held on February 2018.

2017

CSIR-JRF qualified in Physical Science held on December 2016.

2016

GATE-2016 qualified in PH-Physics held on January 2016.

2006

First position in Bhartiya Sanskrit Gyan Pariksha held on March 2006

Awards/Fellowships

- Direct CSIR-SRF - Council of Scientific and Industrial Research (CSIR)
- IISc. Summer Fellowship - Indian Institute of Science (IISc.), Bangalore
- MHRD GATE fellowship (JRF & SRF) for Ph.D. from July 2016 to Nov 2021

Membership of Academic Bodies

- Head, Department of Physics, RHS PG College; Onwards July 2022
- Electronic In-charge, RHS PG College (Technical & Engineering Equipments)
- Graduate Membership of IEEE Magnetic Society
- Graduate Membership of Indian Crystallographic Association

Training History

Summer Fellowship Program (14 June 2014 to 14 July 2014), Indian Institute of Science (IISc.), Bangalore. A mini project entitled on Doppler Free Saturated Absorption Spectroscopy have been done under the supervision of Prof. Vasant Natarajan.

Research Experience

Dr. Shyam Babu received his Ph.D. in Materials science, which is entitled on "Noncollinear magnetic materials for the energy-efficient data storage devices" from SMST, IIT (BHU), Varanasi, U.P., India in 2022. He completed his master's degrees in Physics from Allahabad University, Prayagraj. During the tenure of his Ph.D., he explore various institutions of national and international importance, like, IISER Pune, NISER Bhubaneswar, IIT Delhi, IIT Roorkee, etc. Having worldwide collaborative work experience along with HZB, Berlin, Germany and University of Manitoba, Canada. During his master's degree, he awarded with Summer Fellowship sponsored by the Indian Institute of Science (IISc.), Bangalore. During this tenure of fellowship, he worked under the supervision of Prof. Dr. Vasant Natarajan in Atomic & Optical Lab.

Teaching and Lab at UG & PG Level

- Solid State Physics
- Classical Mechanics
- Nuclear Physics
- Laser and Modern Optics



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Passionate/Future Research Interests

Dr. Shyam Babu's research focuses on synthesis and experimental investigation of nanostructured materials, particularly in nanomagnetism and spintronics, which have potential applications in magnetic recording, low dissipation information storage and nanoelectronics. Current research topics include: Topological spin textures such as magnetic skyrmions and chiral domain walls; Magneto-ionic control of metal/oxide interfaces towards energy-efficient nanoelectronics and neuromorphics; High magnetic anisotropy materials, etc.

Conferences and Summer Schools

- July 2017 NSC45th-2017 Varanasi, India
(45th National Seminar on crystallography held at SMST, IIT-BHU)
• Presented a Poster on Magnetic properties of Helimagnet NiBr₂.
- Dec 2017 ICN:3I-2017 Roorkee, India
(3rd International conference on Nanotechnology held at IIT Roorkee)
• Presented an Oral Presentation entitled on Incommensurate Skyrmionic Phase in Triangular Spin Lattice of Helimagnet NiBr₂.
- Oct 2018 WWSTMS-2018 Kolkata, India
(Winter School on Synchrotron Techniques in Materials Science held at S. N. Bose National Centre for Basic Sciences, Kolkata, India)
• Participated in Winter School on Synchrotron Techniques.
- Dec 2018 ICMAGMA-2018 Bhubaneswar, India
(International conference on Magnetic Materials and Applications held at NISER, Bhubaneswar)
• Presented an Oral Presentation entitled on Magnetic Phase Diagram of Helimagnet NiBr₂.
- Sept 2019 CCTES-2019 Ambedkar Nagar, India
(National Conference on Computational and Characterization Techniques in Engineering & Sciences held at Rajkiya Engineering College Ambedkar Nagar, India)
• Presented an Oral Presentation on non-collinear magnetic structure of triangular spin lattice of NiBr₂.

Publications

- S. Babu, K. Prokes, Y. K. Huang, F. Radu, and S. K. Mishra, 2019, 125, 093902. doi.org/10.1063/1.5066625
- S. Babu, B. K. Singh, and S. K. Mishra, 2020, Mater. Res. Express, 7, 105002. doi.org/10.1088/2053-1591/abbafb
- P. V. Shinde, S. Babu, S. K. Mishra, D. Late, C. S. Rout, M. K. Singh, 2021, Sustainable Energy Fuels. doi.org/10.1039/D1SE00378J
- Raman Hissariya, Shyam Babu, Shankae Ram, and Shrawan Kr Mishra, 2021, Nanotechnology. doi.org/10.1088/1361-6528/ac13eb
- P.K. Ojha, R. Sharma, R. Hissariya, Shyam Babu, E. Ketkar, S. Singh, S. Neema, A. Rana, N. Pal, V.G. Sathe, S.K. Mishra, 2021, Journal of Physics and Chemistry of Solids. doi.org/10.1016/j.jpcs.2021.110564.
- S. Babu, H. Yingkai, and S. K. Mishra, 2018, p. 195,. doi.org/10.5281/zenodo

Reference

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