

CURRICULUM VITAE

DR. SHYAMSUNDAR GHOSH, M.Sc., Ph.D.
Assistant Professor (Stage-2),
Department of Physics,
Bejoy Narayan Mahavidyalaya,
Itachuna, Hooghly- 712147, West Bengal, India



Email: sghoshphysics@gmail.com
Mobile: +91 – 7890490013

Current Position: Since March 17, 2015

Teaching Experience: 5 Yrs .
Research Experience: 11 Yrs

Post-doctoral Research Positions:

- ⇒ **Research Associate** (November 2014 to February 2015), Indian Institute of Science Education and Research Kolkata, Nadia, West Bengal 741252, India
- ⇒ **Research Associate** (October, 2013 – September 2014), Dept. of Material Science, Indian Association for the Cultivation of Science (IACS), Jadavpur, Kolkata-700 032, India
- ⇒ **Extended Senior Research Fellow** (May, 2013 - September, 2013), Dept. of Condensed Matter Physics and Material Science, S. N. Bose National Centre for Basic Sciences, Salt Lake, Kolkata- 700 098, India

Academic Qualifications:

Course	Specialized Subjects	University	Year of Passing
Ph.D.	Physics- (Experimental Condensed Matter Physics)	University of Calcutta, India	2013 Title of Thesis: Magnetic and optical studies of Wide Band-Gap Oxide Semiconductors
M. Sc.	Physics	Indian Institute of Technology (IIT- Delhi)	2008
B. Sc.	Physics (Honours)	Burdwan Raj College (Burdwan University)	2006

Research Interests:

- ⇒ Magnetism and Magnetic materials for Spintronics .
- ⇒ Nanomagnetism & Dilute magnetic semiconductors (DMSs)
- ⇒ Metal-Oxide Nanomaterials (1D) Nanowires, Nanotubes etc
- ⇒ Structural Defects and Positron annihilation Spectroscopy.
- ⇒ Magnetic, optical and electrical properties
- ⇒ Study of Thin-films and Heterostructures for spintronics

Teaching: UG Courses for Physics Hons and General Stream:

- Mechanics-I (CC-1) & Lab
- Mathematical Methods –II (CC-V)
- Solid State Physics (CC-XII and Paper-IX) and Lab.
- Classical Dynamics (DSE-II)
- Electricity and Magnetism (CC-III) and Lab.
- Elements of Modern Physics (CC-IX) and Lab.
- Waves and Oscillations (Paper-I)
- General Properties of Matter(Paper-II)
- Electrostatics & Thermal Physics-I (Paper-III)
- Mechanics-II (Paper-V)
- Nuclear Physics (Paper-X)

Personal Profile :

Name : SHYAMSUNDAR GHOSH
Father's Name : CHANDI CHARAN GHOSH
Date of Birth : 1st February, 1985.
Nationality : INDIAN
Gender : Male
Marital Status : Married
Languages Known : English, Hindi and Bengali
Permanent/Mailing Address : VILL. + P. O. –BARABELUN,
P. S. – BHATAR, DIST. –BURDWAN
WEST BENGAL-713158, INDIA

Qualification in National level Examination:

- ⇒ CSIR National Eligibility Test (NET), 2008 December
- ⇒ Graduate Aptitude Test in Engineering (GATE), 2008
Percentile-98.97, Score-527, All India Rank-59
- ⇒ Joint Entrance Screening Test (JEST), 2008
- ⇒ Joint Admission Test to M. Sc. (JAM), 2006 All India Rank – 132

Awards and Fellowships:

- ⇒ CSIR-NET Fellowship for perusing Ph.D. in Physics Sciences (July, 2009 - June, 2013)
- ⇒ E-SRF Fellowship, S. N. Bose National Centre for Basic Sciences (May, 2013 – September, 2013)
- ⇒ Post-doctoral Fellowship at Indian Association for the Cultivation in Science (October, 2013)
- ⇒ Post-doctoral Fellowship at Indian Institute of Science Education and Research Kolkata (*November 2014*)

Research Papers Published in National/International reputed Journals:

- ⇒ Evidence of oxygen and Ti vacancy induced ferromagnetism in post-annealed undoped anatase TiO₂ nanocrystals: A spectroscopic analysis, Shyamsundar Ghosh*, P.M.G. Nambissan, *Journal of Solid State Chemistry* 275, 174–180, (2019)
- ⇒ Probing of O₂ vacancy defects and correlated magnetic, electrical and photoresponse properties in indium-tin oxide nanostructures by spectroscopic techniques S. Ghosh and B. N. Dev *Applied Surface Science*, 439 891 (2018).
- ⇒ Defect engineered d⁰ ferromagnetism in ITO nanostructures and nanocrystalline thin-films, G. G. Khan, **S. Ghosh**,* A. Sarkar, G. Mandal, N. Banu, U. Manju, G. D. Mukherjee and B. N. Dev *Journal of Applied Physics*, 118, 074303 (2015)
- ⇒ Defect dynamics in Li-substituted nanocrystalline ZnO: A spectroscopic analysis, **S. Ghosh**,* P. M.G. Nambissan, S. Thapa and K. Mandal, *Physica B: Condensed Matter* 454, 102, (2014).
- ⇒ Positron annihilation studies of vacancy-type defects and room-temperature ferromagnetism in chemically synthesized Li-doped ZnO nanocrystals, **S. Ghosh**,* G. G. Khan, K. Mandal, S. Thapa and P.M.G. Nambissan, *Journal of Alloys and Compounds* 590, 396, (2014).
- ⇒ Zinc vacancy-induced high-*T_C* ferromagnetism and photoluminescence in group-1 alkali-metal substituted p-type ZnO thin films, **S. Ghosh**,* G. G. Khan, A. Ghosh, S. Varma and K. Mandal, *Crystal Engineering Communication* 15, 7748, (2013).
- ⇒ Evolution of vacancy-type defects, phase Transition and intrinsic ferromagnetism during annealing of nanocrystalline TiO₂ studied by positron annihilation spectroscopy, **S. Ghosh**,* G. G. Khan, K. Mandal and P.M.G. Nambissan, *Journal of Physical Chemistry C* 117, 8458, (2013).

- ⇒ Effect of film-thickness and oxygen partial pressure on zinc vacancy-induced room-temperature ferromagnetism in Na-doped ZnO thin films, **S. Ghosh**,* G. G. Khan, S. Varma and K. Mandal, *ACS Applied Materials and Interfaces* 5, 2455, (2013).
- ⇒ d^0 Ferromagnetism in Oxide Nanowires: Role of Intrinsic Defects, **S. Ghosh**,* G. G. Khan and K. Mandal, *European Physical Journal Web of Conferences* 40, 03001, (2013).
- ⇒ Influence of Li-N and Li-F co-doping on defect-induced intrinsic ferromagnetic and photoluminescence properties of arrays of ZnO nanowires, **S. Ghosh**,* G. G. Khan, S. Varma and K. Mandal, *Journal of Applied Physics* 112, 043910, (2012).
- ⇒ Origin of room temperature d^0 ferromagnetism and characteristic photoluminescence in pristine SnO₂ nanowires: a correlation, G. G. Khan, **S. Ghosh** and K. Mandal, *Journal of Solid State Chemistry* **186**, 278, (2012). (*Rapid Communication*)
- ⇒ Defect-Driven Magnetism in Luminescent n/p-Type Pristine and Gd-Substituted SnO₂ Nanocrystalline Thin Films, **S. Ghosh**,* G. G. Khan and K. Mandal, *ACS Applied Materials and Interfaces* **4**, 2048 (2012).
- ⇒ Vacancy-induced intrinsic d^0 ferromagnetism and photoluminescence in potassium doped ZnO nanowires, **S. Ghosh**,* G. G. Khan, Bipul Das and K. Mandal, *Journal of Applied Physics* 109,123927, (2011).
- ⇒ Effects of Fe doping and Fe–N-codoping on magnetic properties of SnO₂ prepared by chemical co-precipitation, **S. Ghosh**,* M. Mandal and K. Mandal, *Journal of Magnetism and Magnetic Materials* 323 1083, (2011).
- ⇒ Paramagnetism in single-phase Sn_{1-x}Co_xO₂ dilute magnetic semiconductors, **S. Ghosh**,* D. De Munshi and K. Mandal, *Journal of Applied Physics* 107, 123919, (2010).
- ⇒ Study of Zn_{1-x}Co_xO (0.02≤x≤0.08) dilute magnetic semiconductor prepared by mechanosynthesis route, **S. Ghosh** and K. Mandal, *Journal of Magnetism and Magnetic Materials* 322, 1979, (2010).

*Indicating the corresponding author;

Research Papers Presented/Accepted in National/International Conferences:

- ⇒ Impact of annealing on intrinsic point-defects and magnetic properties of undoped TiO₂ Nanocrystals; **S. Ghosh** and P.M.G. Nambissan, *National Seminar on recent trends on Condensed Matter Physics including Laser Applications*, January 16-18, 2019
- ⇒ Defect-promoted Magnetism in Tin-doped In₂O₃ Nanostructures for High- T_C Ferromagnetic Semiconductor Application; **S. Ghosh** and B. N. Dev, *A National Conference of Condensed Matter Physics : Bose 125 Events*, August 29-31, 2018.
- ⇒ Origin of room-temperature d^0 ferromagnetism in defective TiO₂ nanoparticles: A spectroscopic analysis; **S. Ghosh** and P.M.G. Nambissan, *International Conference on Condensed Matter Physics*, November 14-16, 2017
- ⇒ Defect-driven intrinsic high-temperature ferromagnetism in p-type luminescent Zn_{1-x}M_xO (M = Li, Na and K) thin films, *12th Joint MMM/Intermag Conference 2013*, Chicago, Illinois, United States.

- ⇒ Defects and phase transformation in nanocrystalline TiO₂ studied by positron annihilation Spectroscopy, **16th International Conference in Positron Annihilation (ICPA-16) 2012**, and Bristol, United Kingdom.
- ⇒ Stabilization, enhancement and tuning of ferromagnetism in ZnO and SnO₂ nanowires and thin films, **International Conference on Materials Science and Technology, ICMST-2012**, St.Thomas College Pala, Kottayam, Kerala, India.
- ⇒ d⁰ Ferromagnetism in Oxide Nanowires: Role of Intrinsic defects” **Joint European Magnetic Symposia (JEMS) 2012**, Parma, Italy.
- ⇒ Effect of film-thickness and oxygen partial pressure on room-temperature ferromagnetism in Na-doped ZnO thin films prepared by pulsed laser deposition, **National Conference on Magnetic Materials and Applications (MAGMA) 2012**, IIT-Madras, Chennai, India.
- ⇒ Potassium Substituted ZnO Nanowires: Defect-induced ferromagnetism and correlated photoluminescence, **International Conference on Nanoscience and Technology, (ICONSAT-2012)**. Hyderabad, India.
- ⇒ Vacancy-induced d⁰ Ferromagnetism in Non-magnetic Potassium Substituted ZnO Nanowires, **International Conference of Materials for Advanced Technologies, (ICMAT) 2011**, Suntec City, Singapore.
- ⇒ Structural, Magnetic and optical properties of template embedded potassium substituted ZnO nanowires, **National Conference on Magnetic Materials and Applications (MAGMA) 2011**, SNBNCBS, Kolkata, India.
- ⇒ Alkali metal substituted ZnO Nanowires on AAO template: Study of defect-driven ferromagnetism, **Nanoscience and nanotechnology: Present and Future 2011**, Kandi, Murshidabad, India.
- ⇒ Synthesis, structural and magnetic properties of Co-doped ZnO dilute magnetic semiconductors prepared by mechanical milling, **National Conference on Magnetic Materials and Applications (MAGMA) 2009**, S. N. Bose National Centre for Basic Sciences, Kolkata, India.

Experience in Sample *Preparation & Characterization Techniques*:

Synthesis of Nanostructures & Thin films:

Mechno-synthesis (Ball milling or Alloying); Solvothermal and Hydrothermal synthesis Chemical Co-precipitation techniques; Template-assisted wet-chemical synthesis Pulsed Laser Deposition (PLD); Sputtering (RF/DC Magnetron); Spin Coating technique

Characterization Techniques:

X-ray diffraction; Field Emission Scanning Electron Microscopy (FESEM); Transmission Electron Microscopy (TEM, HRTEM); Vibrating Sample Magnetometer (VSM); Superconducting Quantum Interference Device (SQUID); Atomic and Magnetic Force Microscopy (AFM/MFM); UV-visible Absorption Spectroscopy, Photoluminescence; Spectroscopy, X-ray Photoelectron Spectroscopy (XPS), Raman and FTIR Spectroscopy & Positron Annihilation Spectroscopy.