Dr. Rajendra Prasad Giri

Office 617C, Department of Physics, Indian Institute of Technology (ISM) Dhanbad, Jharkhand 826004, India
Email: **rpgiri@iitism.ac.in**, Phone: +91(0)326-223-5225 (office), 9836775385 (mobile)
Google Scholar: https://scholar.google.com/citations?user=cllK8SYAAAAJ&hl=en
ORCID: https://orcid.org/0000-0002-3791-0513
Webpage: https://sites.google.com/iitism.ac.in/rpgiri

EDUCATION

- PhD. Saha Institute of Nuclear Physics, Kolkata, India 2012-2017
- Post MSc. Saha Institute of Nuclear Physics, Kolkata, India 2011-2012
- MSc. Physics (1st class) Indian Institute of Technology Kharagpur, India 2009-2011
- BSc. Physics (1st class) RKMRC Narendrapur (Calcutta University), India 2006-2009

RESEARCH EXPERIENCE

Assistant Professor 2023-Present
Department of Physics, Indian Institute of Technology (ISM) Dhanbad

Postdoctoral Researcher 2018-2023
Institute for Experimental and Applied Physics, Kiel University, Germany

Project: "Developments of an optical pump – X-ray probe setup at LISA P08 beamline and measurements from liquid surfaces and interfaces
Supervisor: Dr. Bridget M Murphy, Group: Magnussen/Murphy

Senior Research Fellow (doctoral) 2012-2017
Surface Physics and Material Science Division, Saha Institute of Nuclear Physics, India

Thesis title: "Investigation of protein-induced structural changes in model biomembranes"
Supervisor: Dr. Mrinmay K Mukhopadhyay

Junior Research Fellow (doctoral) 2011-2012
Surface Physics and Materials Science Division, Saha Institute of Nuclear Physics, India

Project: "Quantum spin liquids",
Supervisor: Dr. Arti Garg

Project fellow June - August'2011
Dept. of Physics & Meteorology, Indian Institute of Technology Kharagpur, India

Project: "Structural characterization of thin films and multilayers by X-ray scattering technique"
Supervisors: Prof. Samit Kumar Ray and Prof. Sanjeev K Srivastava

RESEARCH & DEVELOPMENT PROJECT (as PI)

- **KiNSIS Early Career Award Grant** 2022-2023
  (Funding source: Kiel Nano, Surface and Interface Science, Kiel University)

- Amount: 5000 Euro (≈ 4,20,000 INR)
- Duration & Status: 1 year, completed
- Role: Principal Investigator

- **KiNSIS MicroProposal Grant** 2021-2022
  (Funding source: Kiel Nano, Surface and Interface Science, Kiel University)
  - Amount: 2000 Euro (≈ 1,76,000 INR)
  - Duration & Status: 1 year, completed
  - Role: Principal Investigator

PRESENTATION

Oral/Invited talks (National/ international)

- **BioSpin 2025** (Invited), Ashoka University, Haryana, India
- **ISUSM 2025** (Invited), IIT (ISM) Dhanbad, India
- **Soft Matter Meet 2024** (Invited), SNIoE, Greater Noida, India
- **Department Seminar at Dept. of Physics, IIT Guwahati**, India: 'Understanding structure and dynamics of nano-bio interfaces and liquid surfaces by X-ray scattering', **February 2023** (Online)
- **Department Seminar at Dept. of Physics, IIT Bombay**, India: 'Understanding structure and dynamics of nano-bio interfaces and liquid surfaces by X-ray scattering', **February 2023** (Online)
- **Department Seminar at Dept. of Physics & Astrophysics, Delhi University**, India: 'Physics of nano-bio interfaces and liquid surfaces', **February 2023** (Online)
- **Department Seminar at Dept. of Physics, NIT Rourkela**, India: 'Physics of nano-bio interfaces and liquid surfaces by X-ray scattering', **February 2023** (Online)
- **SNI 2022**, Free University, Berlin (Germany): 'Time-resolved measurements from liquid vapor interfaces using synchrotron based optical pump X ray probe technique', **September 2022**
- **KiNSIS Retreat 2022**, Sankelmark Academy, Germany: 'Physics of nanoparticle interaction with biomembranes impact on human health and environment', **August 2022**
- **Department Seminar at Dept. of Chemistry, Tsukuba University**, Japan (Invited by Prof. Mafumi Hishida): 'Interaction and self-assembly of foreign molecules and nanoparticles with model biomembrane', **July 2022**
- ***Synchrotron Radiation Instrumentation*** *(Online), Hamburg, Germany*: 'Development of an optical pump – X-ray probe facility for the time-resolved measurements from liquid-vapour interfaces', **March 2022**
- ***DESY Users' Meeting*** *(Online), Hamburg, Germany:* 'Lipid-induced self-assembly of graphene oxide nanoflakes at the air−water interface', **January 2022**
- ***Young Multis 2021****, Krakow, Poland (Online)*: Time-resolved measurements from liquid-vapour interfaces using optical pump - X-ray probe technique, **July 2021**
- ***Departmental Seminar at Physics Department*** *(Invited), Shiv Nadar University, UP, India*: Synchrotron X-ray scattering and optical pump – X-ray probe measurements from liquid surfaces and interfaces, **March 2019**
- ***12th North German Biophysics Meeting****, Borstel, Germany*: 'Concentration and surface packing-specific interaction of planar molecules with lipid membranes', **January 2019**
- ***Saha Memorial Colloquium****, Saha Institute of Nuclear Physics, Kolkata, India*: Physics of interaction between biomembrane and guest molecules from structural perspective, **October 2017**
- ***Group Seminar at Prof. Kenji Sakurai's group, National Institute of Material Science****, Tsukuba, Japan:* 'Investigation of lipid-protein interaction by X-ray scattering methods', **February 2017**

Poster (International, Selected)

- ***DESY Users' Meeting*** *(Online), Hamburg, Germany: '*Time response studies of liquid-vapor interfaces using optical pump - X-ray probe technique', January 2022
- **Surface X-ray and Neutron Scattering** (Online), Lund, Sweden: 'Time response studies of liquid surfaces and interfaces using optical pump - X-ray probe method', **January 2022**
- ***DESY Users' Meeting*** *(Online), Hamburg, Germany: '*Optical pump - X-ray probe studies from liquid-vapour interfaces', **January 2021**
- ***12th North German Biophysics Meeting****, Borstel, Germany*: 'Optical pump – X-ray probe measurements from liquid surfaces and interfaces', **January 2019**
- ***DESY Users' Meeting****, Hamburg, Germany: '*Optical pump - X-ray probe measurements from liquid surfaces and interfaces', **January 2019**
- ***German Conference for Research with Synchrotron radiation, Neutrons and Ion Beams at Large Facilities****, Technical University Munich, Germany*: 'Investigation of structure and dynamics of liquid surfaces by optical pump – X-ray probe measurements', **September 2018**
- ***Surface X-ray and Neutron Scattering****, Pohang Accelerator Laboratory, Korea*: 'Investigation of structure and dynamics of surfaces and interfaces by X-ray scattering and optical pump – X-ray probe measurements', **July 2018**
- ***DESY Users' Meeting****, Hamburg, Germany: '*Continuous uptake or saturation: A concentration and surface packing-specific hemin interaction with phospholipid membranes', **January 2018**
- ***14th International Fischer Symposium****, Kloster Seeon, Germany*: 'Structure and dynamical aspects of hemin interaction with phospholipid model membranes', **May 2018**
- ***Advances in Nanomaterials using Synchrotron Techniques****, Saha Institute of Nuclear Physics, India*: 'X-ray reflectivity study of lipid-biomolecule interaction', **December 2014**
- ***International Union of materials Research Society – ICA 2013****, Indian Institute of Science, India*: 'Structural Study of Polymer-supported Lipid Membranes', **December 2013**
- ***International School on Nanoscience with X-ray and Neutron Sources****, Saha Institute of Nuclear Physics, India*: (Participation only) **July 2012**
- ***Surface X-ray and Neutron Scattering****, Hyatt Regency, India*: (Participation only) **July 2012**

EDITORIAL EXPERIENCE

- Served as a reviewer for **Biophysical Journal** (Elsevier), **Small** (Wiley-VCH), **J. Phys. B: At. Mol. Opt. Phys.** (IOP), **Adv. Colloid Interface Sci.** (Elsevier)
- Currently serving as a Volunteer Reviewer at MDPI journals: **Biomimetics**, **Physchem**, and **Biophysica**

TECHNICAL EXPERIENCE

- Synchrotron-based developments
    - Optical (laser) pump – X-ray probe setup at LISA P08 (PETRA III, DESY, Germany) for ultrafast non-equilibrium dynamics measurements from liquid surfaces and interfaces
    - Liquid surface X-ray diffractometer at the Indian Beamline at Photon Factory, KEK, Japan
    - Grazing incidence diffraction (GID) and grazing incidence small angle X-ray scattering (GISAXS) setup in the LISA P08 beamline at PETRA-III (DESY, Germany)
- Lab-based instruments handled/managed
    - Langmuir-Blodgett trough (KSV NIMA) integrated with Brewster's Angle Microscopy
    - X-ray diffractometer (Bruker Corp. & Rigaku SmartLab),
    - Atomic Force Microscopy (Agilent Technologies)

- Ellipsometry
- Work experience as synchrotron beamline scientist
  - At the Indian Beamline at Photon Factory, KEK, Japan from 2015-2017
  - At LISA P08 for X-ray reflectivity, GID and GISAXS from air-water interfaces in Langmuir trough and liquid-liquid interfaces
  - At LISA P08 for pump-probe measurements from liquid-vapor interfaces (liquid Hg, water, water-based halide salt solutions)
- X-ray and neutron beamlines visited
  - Indian Beamline BL-18B at PF, KEK, Japan
  - LISA P08 at PETRA III, DESY, Germany
  - ID 10 at ESRF, France
  - BL-2 and BL-9 at DELTA, Dortmund, Germany
  - KMC-3 at BESSY II, HZB Berlin, Germany
  - Neutron beamline BL-16 at J-PARC, Japan
- Programming languages
  - Python, MATLAB, C, Fortran

TEACHING EXPERIENCE

- Biophysics – Winter semester 2025 – IIT (ISM) Dhanbad
- Theoretical Physics – Monsoon semester 2024 – IIT (ISM) Dhanbad
- Material Science and Engineering – Summer (spcl.) semester 2024 – IIT (ISM) Dhanbad
- Introduction to Biophysics – Winter semester 2024 – IIT (ISM) Dhanbad

THESIS SUPERVISION

- Ongoing: 2 PhD research scholars – IIT (ISM) Dhanbad
- Bachelor's thesis of Ms. Katharina Steinkirchner, July – November 2023 – Kiel University, Germany
- M.Sc. Res. Practical of Mr. Lukas Petersdorf & Mr. Nicolas Hayen, June – August 2022 – Kiel University, Germany
- Bachelor's thesis of Mr. Zhi Yuan, October 2019 – January 2020 – Kiel University, Germany
- Gave laboratory training to undergraduates and research fellows as a part of my PhD supervisor's teaching duties on several experimental courses, mainly based on X-ray scattering techniques using laboratory X-ray sources and thin film deposition of soft materials and their characterization. – SINP, Kolkata

HONORS AND AWARDS

- **Early Career Award** 2022 by Kiel Nano Surface and Interface Science, Kiel University
- **Full travel grants** for attending RACIRI Summer School 2018 in Rugen Island, Germany
- **Best poster award** in "Young Scientist Colloquium 2016" at SNBNCBS, Kolkata, India
- **JRF and SRF** through NET (UGC, India) for pursuing PhD in physics (2011-2016)
- **GATE Physics** 2011 (All India Rank, AIR 238) and GATE Physics 2016 (AIR 431)
- **M-C-M scholarship** from IIT Kharagpur, 2009-2011
- **JAM Physics** 2009 (AIR 89), JEST Physics 2011 (AIR 112)
- **M-C-M scholarship** from the Govt. of West Bengal for securing 1st class in B.Sc. Physics 2009
- **Prof. K. P. Memorial prize** for securing 2nd highest in Physics (major) from RKMR College Narendrapur (affiliated to Calcutta University) 2009, Kolkata, India