

Dr. Surajit Rakshit, (Ph.D., Physical Chemistry)

Assistant Professor

Department of Chemistry, Institute of Science

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EDUCATION

- ❖ Ph. D. in Science **2014** (Chemistry) S. N. Bose National Centre for Basic Sciences, Jadavpur University, Kolkata, India
- ❖ Master of Science in Chemistry **2009 (79.7%)**, Burdwan University, West Bengal, India.
- ❖ Bachelor of Science (Honours with Chemistry) **2007 (76.6%, 6th Rank)**, Burdwan University, West Bengal, India

SPONSORED RESEARCH PROJECT UNDERTAKEN

Designation	Project Title	Sponsored By	Duration	Project Value	Status
PI	Unravelling the Role of Macromolecular Crowding in Biomolecular Structural Dynamics	UGC	2019-21 2 years	10 Lakh	Completed
PI	Intrinsically Disordered Proteins (IDPs) under Macromolecular Crowding	DST-SERB	2019-22 3 years	40 Lakh	Ongoing
PI	Liquid-Liquid Phase Separation of Intrinsically Disordered Proteins (IDPs): Interactions, Structure, Function, and Dynamics	Institute of Eminence	2020-23 3 years	10 Lakh	Ongoing

RESEARCH GUIDANCE

Doctoral: 3 (Ongoing)

Master's: 5 (completed)

RESEARCH AND TEACHING EXPERIENCE:

October, 2017- till now: Assistant Professor

Department of Chemistry, Institute for Basic Science, Banaras Hindu University.

June, 2017- October 2017: Assistant Professor

Vijaygarh Jyotish Ray College, affiliated to the University of Calcutta.

July, 2016- April 2017: Post-Doctoral Research Fellow

Center for Soft and Living Matter, Institute for Basic Science, UNIST, South Korea, with **Prof. Oh Hoon Kwon**.

July, 2014- June 2016: Post-Doctoral Research Fellow

Center for Nanomaterials and Chemical Reactions, Institute for Basic Science, KAIST, South Korea, with **Prof. Hyotcherl Ihee**.

Visiting Research Scholar (December, 2013-January, 2014)

Department of Cellular Organization and Signalling,
National Centre for Biological Sciences

October 2013- June, 2014: Extended Senior Research Fellow

Department of Chemical, Biological & Macromolecular Sciences, S N Bose National Centre for Basic Sciences, India with **Prof. Samir Kumar Pal**.

August, 2009- September, 2014: Graduate Studies

Department of Chemical, Biological & Macromolecular Sciences, S N Bose National Centre for Basic Sciences, India with **Prof. Samir Kumar Pal**.

Thesis title: “*Spectroscopic Studies on Structure, Function and Dynamics of Biomolecules in Presence of Other Biologically Relevant Macromolecules*”.

AWARDS, AFFILIATIONS AND SCHOLARSHIPS HELD

- ❖ **Junior Research Fellow (JRF)** (December 2008) from CSIR (Council of Scientific and Industrial Research), Human Resource Development Group, India.
- ❖ **Junior Research Fellow (JRF)** (June 2009) from CSIR (Council of Scientific and Industrial Research) India from 24th August 2009 to August 2011.
- ❖ All India **GATE (Graduate Aptitude Test in Engineering) Fellowship-2009, Percentile: 98.81, Rank (all India): 79** was organised by IIT's (Indian Institute of Technology).
- ❖ **6th rank** in B.Sc. from **The University of Burdwan**.
- ❖ **Radha Binod Merit Scholarship** for the highest marks in Chemistry (Hons.) from Bankura Sammilani College.

PATENTS & PUBLICATIONS

Patents:

1. Sodium Bis(2-Ethylexyl) Sulfosuccinate (AOT) based Drug Delivery System. **Indian Pat. Appl. (2011)**, 963/KOL/2011 dated 20th July 2011.

Journals:

1. K. Kumari, A. Kumar, A. T. Manjur and **S. Rakshit***, "Bioactives Promiscuity of Mucin: Insight from Multi-spectroscopic, Thermodynamic, and Molecular Dynamic Simulation Analyses" **Langmuir (Manuscript in ASAP)** 2023 (<https://doi.org/10.1021/acs.langmuir.2c03268>)
2. **S. Rakshit***, T. Ahamad, "Study on mucin bio-condensates formed via liquid-liquid phase separation and the role of excipients" **ACS Fall 2022 Abstract Symposium** (Abstract id: 3750290)
3. A. Sharma, D. Kim, J.-H. Park, **S. Rakshit**, J. Seong, G. H. Jeong, O.-H Kwon and M. S. Lah, "Mechanistic insight into the sensing of nitroaromatic compounds by metal-organic frameworks" **Communications Chemistry (Nature)** 2 (2019), 39
4. U. K. Bhui, S. Sanyal, R. Saha, **S. Rakshit**, and S. K. Pal, "Steady-state and time-resolved fluorescence spectroscopic study of petroleum crudes in aqueous-surfactant solutions: Its implications for enhanced oil recovery (EOR) during surfactant flooding" **Fuel**, 234, (2018), 1081.
5. Y.-J. Kim[#], **S. Rakshit**[#], G. Y. Jin; P. Ghosh; Y. M. Lee; W.-W. Park; Y. S. Kim; O.-H. Kwon, "Synergistic Configuration of Diols as Brønsted Bases", **Chemistry - A European Journal**, 23, (2017), 17179.
6. **S. Rakshit**, R. Saha, R and S. K. Pal, "Modulation of Environmental Dynamics at the Active site and Activity of an Enzyme under Nanoscopic Confinement: Subtilisin Carlsberg in Anionic AOT Reverse Micelle", **J. Phys. Chem. B**, 117 (2013) 11565.
7. **S. Rakshit**, R. Saha, A. Chakraborty and S. K. Pal, "Effect of Hydrophobic Interaction on Structure, Dynamics and Reactivity of Water", **Langmuir**, 29 (2013) 1808.
8. **S. Rakshit**, R. Saha, A. Singha, Z. S. A. Seddigi and S. K. Pal, "Molecular Interaction, Cosolubilisation of Organic Pollutants and Ecotoxicity of a Potential Carcinogenic Fuel Additive MTBE in Water", **J. Mol. Liq.**, 180 (2013) 235.
9. R. Saha, **S. Rakshit**, R and S. K. Pal, "Molecular Recognition of a Model Globular Protein Apomyoglobin by Synthetic Receptor Cyclodextrin: Effect of Fluorescence Modification of the Protein and Cavity Size of the Receptor in the Interaction", **J. Mol. Recognit.**, 26 (2013) 568.
10. R. Saha[#], P. K. Verma[#], **S. Rakshit**, S. Saha, S. Mayor and S. K. Pal, "Light driven ultrafast electron transfer in oxidative redding of Green Fluorescent Proteins", **Scientific Reports**, 3 (2013) 1580.
11. R. Saha, **S. Rakshit**, P. K. Verma, R. K. Mitra and S. K. Pal, "Protein-Cofactor Binding and Ultrafast Electron Transfer in Riboflavin Binding Protein under the Spatial Confinement of Nanoscopic Reverse Micelles", **J. Mol. Recognit.**, 26 (2013) 59.

12. R. Saha, **S. Rakshit**, D. Majumdar, A. Singha, R. K. Mitra, and S. K. Pal, “Nanostructure, Solvation Dynamics and Nano-templating of Plasmonically Active SERS Substrate in Reverse Vesicles”, **J. Nanopart. Res.** 15 (2013) 1576.
13. **S. Rakshit**, R. Saha, P. K. Verma, R. K. Mitra and S. K. Pal, “Ultrafast electron transfer in Riboflavin binding protein in macromolecular crowding of nano-sized micelle”, **Biochimie**, 94 (2012) 2673.
14. **S. Rakshit**, N. Goswami and S. K. Pal, “Slow solvent relaxation dynamics of nanometer sized reverse micellar systems through Tryptophan metabolite, Kynurenine”, **Photochem. Photobiol.**, 88 (2012) 38.
15. **S. Rakshit**, R. Saha, P. K. Verma and S. K. Pal, “Role of Solvation Dynamics in Excited State Proton Transfer of 1-Naphthol in Nanoscopic Water Clusters Formed in a Hydrophobic Solvent”, **Photochem. Photobiol.**, 88 (2012) 851.
16. R. Saha, **S. Rakshit**, R. K. Mitra and S. K. Pal, “Microstructure, Morphology and Ultrafast Dynamics of a Novel Edible Microemulsion”, **Langmuir**, 28 (2012) 8309.
17. S. Batabyal, **S. Rakshit**, S. Kar, and S. K. Pal, “An Improved Microfluidics Approach for Monitoring Real-Time Interaction Profiles of Ultrafast Molecular Recognition”, **Rev. Sci. Instrum.** 83 (2012) 043113.
18. P. K. Verma, **S. Rakshit**, R. K. Mitra and S. K. Pal, “Role of hydration on the functionality of a proteolytic enzyme alpha-chymotrypsin under crowded environment”, **Biochimie** 93 (2011) 1424.

Book Chapters

1. K. Kumari[#], D. Bera[#], V. Kumar, **S. Rakshit***, and N. Goswami, Invited Book Chapter, “Functionalized Metal Nanoclusters for Biosensing Applications” in "Emerging Nanotechnologies for Water Treatment", Royal Society of Chemistry, 2021, eISBN: 978-1-83916-509-2.

CONFERENCES ATTENDED AND PAPER PRESENTED

- Presented a talk entitled “Study on mucin bio-condensates formed via liquid-liquid phase separation and role of excipients” at ACS Fall, USA, 2022.
- Presented a poster “Spectroscopic Investigation of Mucin and Bioactives Interaction Mechanism” in **National Symposium on Contemporary Trends and Future Prospects of Functional Materials (CTFM 2019)** organized by Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, India During November 29-30, 2019.
- Invited Speaker in “**International Conference on Recent Advances at Interfaces of Physical and Life Sciences (RAIPLS-2019)**” at Department of Chemistry, University of Rajasthan, Jaipur held on January 28-30, 2019.
- Presented a **poster** “Effect of Diffusion and Solvent Polarity on Electron Transfer Reaction between Coumarin and Aniline” in **National Symposium on Emerging Trends in Chemical Science (NSETCS-2018)** organized by Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, India During November 17-18, 2018.

- Presented a **talk** “Spectroscopic Studies on Structure, Function and Dynamics of Biomolecules in Presence of Other Biologically Relevant Macromolecules” at the **Bose Fest 2013** in S.N. Bose National Centre for Basic Sciences, Kolkata, India.
- Presented a **poster** entitled “Slow Solvent Relaxation Dynamics of Nanometer Sized Reverse Micellar Systems through Tryptophan Metabolite, Kynurenine” at the International Symposium on **Chemistry and Complexity** in IACS, Kolkata, India, 2012.
- Presented a **poster** “Slow Solvent Relaxation Dynamics of Nanometer Sized Reverse micellar Systems through Tryptophan Metabolite, Kynurenine” at the **Bose Fest 2012** in S.N. Bose National Centre for Basic Sciences, Kolkata, India.
- Attend a National workshop on Fluorescence Correlation Spectroscopy (FCS) & Biophotonics **2010**, NEHU, Shilong.

PERSONAL INFORMATION

Date of birth & Place: February 24, 1987, Bankura, West Bengal (INDIA) **Nationality:** Indian, **Sex:** Male **Marital status:** Married