DR. PRITHIDIPA SAHOO

Assistant Professor in Chemistry

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Areas of Specialisation

Organic Chemistry, Organic Synthesis, Molecular recognition, Supramolecular chemistry, Nanomaterials, Carbon quantum dots, MOF

Qualification

- B.Sc. (Honours) in Chemistry, Vidyasagar University, 2001.
- M.Sc. in Chemistry (Organic Chemistry Spl.), Vidyasagar University, 2003.
- Ph.D. (Science) with Professor Shyamaprosad Goswami and Prof Ajit K Mahapatra, IIEST, Shibpur, 2010.
- Post-doctoral Fellow with Professor Ralf Waumuth, Rutgers University, USA, 2010 – 2012.

Teaching Experience

- Assistant Professorship (Dec., 2012- Till date); Visva-Bharati, Shantiniketan
- Lectureship (October, 2011 - July, 2012); Deparment of Chemistry and Chemical biology, Rutgers University, NJ, USA.

Research interests

- Organic Synthesis of fluorophore
- Molecular Recognition and Supramolecular Chemistry, exploration of the different biological applications of important biomolecules, drugs, and antibiotics through molecular recognition and drug delivery systems
- Recognition of some toxic/ hazardous elements associated with food, industry, agriculture, and the environment with chemosensing and chemodosimetric approach
- Synthesis of Carbon Quantum dots and their applications in the drug delivery system
- Carbon quantum dots and their applications as a nanofertilizer and stress controller of plants
- Preparation of MOFs for the detection of environmental toxicants
- Structure elucidation of novel antibiotics

Research projects (Completed/Ongoing)

- "Water soluble Photoresponsive Fluorophore: Design, Synthesis, and Exploration of their Biological application for specific recognition with Purine derivatives", SERB, New Delhi, 2014; 20 L.
- "Water soluble photoresponsive fluoroionophore with small cavitand: Design, synthesis and live-cell imaging for heavy metal ions", UGC, New Delhi, 2014; 6 L.
- "Water soluble fluorescent chemosensors: Design, synthesis, and exploration of their biological application for specific recognition with purine, pyridine derivatives and nucleotides." CSIR, New Delhi, 2019; 30 L.
- "Design and synthesis of novel fluorescent chemosensors to target and/or label crucial proteins of therapeutic interest" SERB, New Delhi, 2021; 51.15 L.

Award

- Young Scientist Award, Venus International Research Awards-VIRA 2018
- Professor Asima Chatterjee Best Scientist Award- 2018
- NESA Scientist of the year-2019, National Environment Science Academy
- Professor Asima Chatterjee Young Scientist Award- 2020
- CRS (Chiarantan Rasayan Sasthra) Bronze Medal Award- 2022
- Prof. D. K. Banerjee Memorial Lecture Award- 2023, IISc, Bangalore

Group members

Ph. D Student

1. Dr. Himadri Sekhar Sarkar [Degree awarded, 2018, presently JSPS post-doctoral fellow at Tohoku University, Japan]

2. Dr. Sujoy Das [Degree awarded, 2020, Presently Post-doctoral fellow, Faculty of Chemistry, University of Lodz, Poland]
3. Dr. Ayndrila Ghosh [Degree awarded, 2021]
4. Dr. Shampa Kundu [Degree awarded, 2022]
5. Dr. Shrabani Saha [Degree awarded, 2023]
6. Dr. Saurodeep Mandal [Degree awarded, 2024]
7. Dr. Jiko Rout [Degree awarded, 2025]
8. Dr. Priyotosh Ghosh [Degree awarded, 2025]
9. Ms. Shrodha Mondal [Ph.D. student, 2021]
10. Mr. Diptiman De [Ph.D. student, 2022]
11. Ms. Tumpa Biswas [Ph.D. student, 2023]

Membership in professional societies

1. Member (e-member) of the Royal Society of Chemistry (RSC)
2. Member of the Society of Chemical Industry
3. Member of the Indian Chemical Society
4. Member of the National Environmental Science Academy

Publications

1. CO-detecting torch using carbon nanodots, Shrodha Mondal and **Prithidipa Sahoo*,** ***Journal of Materials Chemistry C*****, 2025** https://doi.org/10.1039/D5TC02382C.
2. Carbon Nanodots with Dual Capabilities: Glutamic Acid Sensor and Plant Growth Promoter Under LED Stress Conditions, Tumpa Biswas, Olivia Sarkar, Shrodha Mondal, and **Prithidipa Sahoo*,** ***ACS Applied Bio Materials,*** **2025**.
3. Carbon Nanodots/Ag Composites Enable Real-time Monitoring of Intracellular Adenine Dynamics under Oxidative Stress, Diptiman De, Shrodha Mondal, Santosh Jana, Sukhendu Mandal, and **Prithidipa Sahoo*,** ***ACS Applied Nano Materials,*** **2025.**
4. Signaling Pathway of Serotonin in Plants: Monitoring with an Emergent Nanosensor, Shrodha Mondal, Sayan Maiti, Nayanita Gorai, Santosh Jana, Sukhendu Mandal, and **Prithidipa Sahoo*,** ***Chemistry-An Asian Journal,*** **2025** (Under minor revision).
5. Ethephon Contamination in Agricultural Products: Development of a Nanosensor for Quality Control in the Food Industry and Exported Food, Shrodha Mondal, Olivia Sarkar, Ansuman Chattopadhyay, **Prithidipa Sahoo*,** ***ACS Sustainable Chemistry and Technology***, **2025,**13, 2998−3009, https://doi.org/10.1021/acssuschemeng.4c10221.
6. Nanosensors for hazardous pesticides and Nanofertilizers for agricultural sustainability: Contribution of carbon quantum dots, Tumpa Biswas, **Prithidipa Sahoo*,** ***Dalton Transaction*****, 2025,** 54, 9835, DOI: 10.1039/d5dt00633c**.**

7. Monitoring of CO as a plant signaling molecule under heavy metal stress using carbon nanodots, Shrodha Mondal, Olivia Sarkar, Ansuman Chattopadhyay, Santi M Mandal, and **Prithidipa Sahoo*, *Dalton Transaction,* 2025,** DOI: 10.1039/d4dt03101f.
8. Naked eye detection of Arsenite, Arsenate, and H_2S using a single paper strip, Diptiman De, Priyotosh Ghosh, Sriman De, and **Prithidipa Sahoo*, *Environmental Science: Advances,* 2024,** 3, 1578, DOI: 10.1039/d4va00213j.
9. Dual Sensing of Hypochlorite and Aluminium in Plant Tissues by a Selective Diimine-Based Chemosensor, Priyotosh Ghosh, Saurodeep Mandal, Sunanda Mukherjee, Ansuman Chattopadhyay, **Prithidipa Sahoo*,** submitted in ***Journal of Photochemistry and photobiology A*, 2024,** 459, 116004-116014, https://doi.org/10.1016/j.jphotochem.2024.116004.
10. *In vivo* monitoring of GABA by N-doped Carbon Quantum Dots, Jiko Raut, Rinchen Doma Sherpa, Santosh Kumar Jana, Santi M Mandal, Sukhendu Mandal, Subhra Prakash Hui, and **Prithidipa Sahoo*, 2024,** 7, 23278−23287, https://doi.org/10.1021/acsanm.4c05097.
11. Development of an assay for colorimetric and fluorometric detection of H_2S, Priyotosh Ghosh, Diptiman De, **Prithidipa Sahoo*, *RSC Advances*, 2024,** 14, 25071, DOI: 10.1039/d4ra04339a.
12. Development of a Nanomarker for In Vivo Monitoring of Dopamine in Plants, Shrodha Mondal, Olivia Sarkar, Jiko Raut, Santi M Mandal, A. Chattopadhyay, **Prithidipa Sahoo*,** ***ACS Appl. Bio Mater***., **2024**, 7, 4690-4701, https://doi.org/10.1021/acsabm.4c00506.
13. N-Carbon Quantum Dot/Cu Complex for In Vivo Monitoring of Glycine Levels, Jiko Raut, Rinchen D. Sherpa, Santosh K. Jana, Santi M. Mandal, Sukhendu Mandal, Subhra P. Hui, and **Prithidipa Sahoo*, *ACS Appl. Nano Mater***., **2023**, 6, 23611−23619.
14. Insights into Colistin-mediated fluorescence labelling of bacterial LPS, Saurodeep Mandal**,** Dipanwita Patra, Sukhendu Mandal, Gourab Kanti Das, **Prithidipa Sahoo*, *RSC Advances***, **2024**, 14, 2770-2777, DOI: 10.1039/d3ra07107c.
15. Iodine (III) promoted oxidative carbotrifluoromethylation of maleimides with imidazopyridines and Langlois' Reagent, Dipti Lai, Shuvam Bhattacharya, Saurodeep Mandal, **Prithidipa Sahoo,** Subrata Sinha, Alakananda Hajra**, *Chem Commun***., **2024,** 60, 2232.
16. Endophytic Streptomyces sp. MSARE05 isolated from roots of Arachis plant produces a new class antimicrobial compound, Md Majharul Islam, Shrabani Saha, **Prithidipa Sahoo*,** Sukhendu Mandal*, ***Journal of Applied Microbiology***, **2024,** https://doi.org/10.1093/jambio/lxae051.
17. Efficient delivery of methotrexate to MDA-MB-231 breast cancer cells by a pH-responsive ZnO nanocarrier, Jiko Raut, Olivia Sarkar, Tanmoy Das, Santi M. Mandal, Ansuman Chattopadhyay & **Prithidipa Sahoo*, 2023, *Scientific Reports***, 13, 21899.
18. Direct fluorescence labelling of NO inside plant cells, Priyotosh Ghosh, Shrabani Saha, Sunanda Mukherjee, Ansuman Chattopadhyay and **Prithidipa Sahoo*, *Organic & Biomolecular Chemistry*, 2023,** 21, 9270.
19. Exigent carbon nanodots for trapping 6-thioguanine to resist fire blight caused by *Erwinia amylovora* in an orchard, S. Mondal, J. Raut, O. Sarkar, A. Chattopadhyay, **Prithidipa Sahoo*, *New Journal of Chemistry***, **2023**, 47, 20859.
20. Photocatalysis and electrocatalysis enhanced with carbon quantum dots, Jiko Raut and **Prithidipa Sahoo*, *Prayogik Rasayan*, 2023,** 07(3), 84 -95.

21. Gene Silencing and Gene Delivery in Therapeutics: Insights Using Quantum Dots, S. Mondal, J. Raut, **Prithidipa Sahoo*,** ***Frontiers in Bioscience-Landmark***, **2023**, 28, 364.

22. Differential detection of aspartic acid in MCF-7 breast cancer cells, P Ghosh, T Das, A Chattopadhyay, **Prithidipa Sahoo*,** ***Organic & Biomolecular Chemistry*****, 2023,** 21, 7018-7023.

23. Detection of exposed phosgene in household bleach: development of a selective and cost-effective sensing tool, Shrabani Saha and **Prithidipa Sahoo*,** ***Environmental Science: Processes and impacts*****, 2023,** 25**,** 1144**.**

24. In vivo 'turn on' fluorescence detection of free cysteine in zebrafish kidney and liver, ***Journal of Photochemistry and Photobiology B Biology***, P. Ghosh, S. Mandal, S. Kundu, S Saha, R D Sherpa, Md M. Islam, S. P. Hui, S. Mandal, **Prithidipa Sahoo*, 2023,** 245, 112747.

25. Targeted antibacterial potency against multidrug resistance pathogen enhanced with N, S-co-doped carbon quantum dots selectively recognize rifampicin, J. Raut, D. Patra, S. M. Mandal, S. Mandal, **P. Sahoo**[*]**,** ***Journal of Photochemistry & Photobiology: A,*** 442, 114761, **2023**.

26. A facile turn-on luminescence technique to trap hydrazine and its application in button mushroom (Agaricus bisporus), P. Ghosh, K. Dey, A. Chattopadhyay, **P. Sahoo**[*]**,** ***New Journal of Chemistry***, **47, 6866, 2023**.

27. Fabrication of luminescent chemosensor for selective detection of Al^{3+} used as an adjuvant in pharmaceutical drugs, S. Saha, S. Mondal, **P. Sahoo**[*]**,** ***Organic & Biomolecular Chemistry*****,** 21, 981, **2023**.

28. Reliable detection of fluoroquinolones in pharma-effluents: Increasing exposure in the environment triggers rise of antimicrobial resistance, S. Mandal, Md M. Islam, P. Ghosh, S. Mandal, **Prithidipa Sahoo**[*]**,** ***ChemistrySelect*****,** 8, **2023.**

29. Cobalt-conjugated carbon quantum dots for in vivo monitoring of the pyruvate dehydrogenase kinase inhibitor drug dichloroacetic acid, Jiko Raut, Md Majharul Islam, Rinchen Doma Sherpa, Subhraprakash Hui, Santi M. Mandal, Sukhendu Mandal, and **Prithidipa Sahoo***, ***Scientific Reports*****, 2022,** DOI: 10.1038/s41598-022-22039-w.

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31. An antibacterial compound Pyrimidomycin produced by Streptomyces sp. PSAA01 isolated from soil of Eastern Himalayan foot-hill, P. Das, S. Kundu, P. Maity, **Prithidipa Sahoo***, Sukhendu Mandal, ***Scientific Reports***, **2022**, DOI: 10.1038/s41598-022-14549-4.

32. N-Doped Carbon Quantum Dots for Differential Detection of Doxycycline in Pharmaceutical Sewage and in Bacterial Cell, Jiko Raut, Md Majharul Islam, Shrabani Saha, Santi M. Mandal, Sukhendu Mandal, and **Prithidipa Sahoo*** ***ACS Sustainable Chem. Eng***. **2022**, 10, 9811−9819.

33. The impact of MOFs in pH-dependent drug delivery systems: progress in the last decade, Diptiman De and **Prithidipa Sahoo***, ***Dalton Trans.*****, 2022**, 51, 9950

34. A selective luminescent probe to monitor cellular ATP: Potential application for in vivo imaging in zebrafish embryo, S Kundu, S Biswas, S Ghosh, I Karmakar, G Brahmachari, S Maitra, **P Sahoo** ***Journal of Photochemistry and Photobiology A***, **2022**, 428, 113895.

35. Reliable fluorescence technique to detect the antibiotic colistin, a possible environmental threat due to its overuse, Saurodeep Mandal, Arpan Dey Bhowmik, Alpana Mukhuty,

Shampa Kundu, Khai-NghiTruong, Kari Rissanen, Ansuman Chattopadhyay & **Prithidipa Sahoo, *Scientifc Reports*, 2022** 12, 9307

36. A handy and accessible tool for identification of Sn(II) in toothpaste. Shampa Kundu, Khai Ngai Troung, Shrabani Saha, Kari Rissanen, Prithidipa Sahoo*, Scientific Reports, 2022.

37. Easy and rapid chemosensing method for identification of accumulated Tin in algae: A solemn strives to protect marine eco-system, Shrabani Saha, Sreejata Kamila, Ansuman Chattopadhyay and **Prithidipa Sahoo***, ***New Journal of Chemistry***, 2022, DOI: 10.1039/D1NJ05680H.

38. Involvement of a unique chemodosimeter in the selective estimation of noxious cyanide in common water hyacinth (Eichhornia crassipes): an environmental refinement, Shrabani Saha, Priyotosh Ghosh, Paritosh Mondal, Ansuman Chattopadhyay and **Prithidipa Sahoo*** ***Environ. Sci.: Processes & Impacts***, **2021**, 23, 1308. [**Selected as front cover of this issue**]

39. Introduction of a luminescent sensor for tracking trace levels of hydrazine in insect pollinated cropland flowers, Shrabani Saha, Sujoy Das, Olivia Sarkar, Ansuman Chattopadhyay, Kari Rissanen and **Prithidipa Sahoo***, ***New J. Chem***., **2021**, 45, 17095, [**Selected as inside front cover of this issue**]

40. Fluorescence 'off–on–off' signaling with zinc ensemble: a new array of investigating prevalence of ATP in liver cancer cells, Shampa Kundu, Md Majharul Islam, Sukhendu Mandal and **Prithidipa Sahoo***, ***New J. Chem***., **2021**, 45, 3188.

41. Luminescence turn-on response of naphthalene diimide based chemosensor with Formaldehyde: A novel stratagem for estimation of formaldehyde in storage fish samples, Shrabani Saha, **Prithidipa Sahoo***, ***Bioorganic & Medicinal Chemistry Letters***, **2021**, 49, 128287.

42. Spectroscopic and computational studies on a Dansyl based luminescent probe: Detection of water contaminant in hygroscopic deuterated solvents, Saurodeep Mandal, Koushik Pramanik, Sujoy Das, Md Majharul Islam, Sukhendu Mandal and **Prithidipa Sahoo***, ***Letters in Organic Chemistry***, **2021**, DOI: 10.2174/1570178618666210610161531

43. Prompt detection of endogenous hypochlorite (ClO^-) in murine macrophages and zebrafish embryos facilitated by a distinctive chemodosimetric mode, Shrabani Saha, Sujoy Das, Sriparna Das, Anwesha Samanta,b Sudipta Maitra, and **Prithidipa Sahoo * *Org. Biomol. Chem***., ***2020***, 18, 6716–6723.

44. Detection of Biothiols Using Some Novel Chemosensors: An Overview, Jiko Raut, **Prithidipa Sahoo*** ***Mini-Reviews in Organic Chemistry***, **2020**, DOI: 10.2174/1570193X17999201109212903.

45. Streptomyces sp SM01 isolated from Indian soil produces a novel antibiotic picolinamycin effective against multi drug resistant bacterial strains Pulak Kumar Maiti Sujoy Das, **Prithidipa Sahoo***, & Sukhendu Mandal. ***Scientific Reports***, ***2020***, 10, 10092-10103

46. Insights into the phenomenon of acquisition and accumulation of Fe3+ in Hygrophila spinosa through fluorimetry and fluorescence images, Ayndrila Ghosh, Saurodeep Mandal, Sujoy Das, Pallab Shaw, Ansuman Chattopadhyay, **Prithidipa Sahoo***, ***Tetrahedron Letters***, ***2020***, 61, 151520.

47. A multi-signaling performance for simultaneous surveillance and accretion of Cysteine and Serine in human cancer cell, Shampa Kundu, Pulak Kumar Maiti, **Prithidipa Sahoo***, ***Asian Journal of Organic Chemistry***, ***2020,*** 9, 94 –98. [**Selected as journal's front cover page**]

48. A unique dual sensor for the detection of DCNP (nerve agent mimic) and Cd^{2+} in water, AyndrilaGhosh, Sujoy Das, Saurodeep Mandal, **Prithidipa Sahoo***, ***New J. Chem., 2019,*** 43, 16968.

49. Highly Selective Optical and Fluorescence "Turn On" Signaling of Al3+: Cell Imaging and Estimation in Rice Plant, Shrabani Saha, Sujoy Das, **Prithidipa Sahoo***, ***Chemistry Select***, **2019, 4, 13968– 1397**.

50. Rapid and selective visual detection of DCNP (nerve gas mimic) in sea water and soil with a simple paper strip, Shampa Kundu, Shrabani Saha, **Prithidipa Sahoo***, ***Results in Chemistry, 2019***, 01, 100014.

51. A colorimetric sensor for Hydrogen Sulfide: Detection from Biogas and quantitative estimation in water, Sujoy Das and **PrithidipaSahoo*, *Sensor and Actuator B*, *291*,** 287-92**, 2019**.

52. Development of a new flurescent probe for cysteine detection in processed food samples, Sujoy Das, HimadriSekharSarkar, Shrabani Saha & **Prithidipa Sahoo***, ***Anal. Bioanal. Chem***, **2019**, 41, 6203–6212.

53. Estimation of hydrogen sulfide from crude petroleum: A unique invention using a simple chemosensor, S. Kundu and **Prithidipa Sahoo***, ***New J. Chem., 2019,*** 43, 12369**.**

54. Sujoy Das, Urmi Mukherjee, S. Pal, Sudipta Maitra and **Prithdipa Sahoo***, Selective sensing of Al^{3+} ion by nitrophenyl induced coordination: Imaging in zebrafish brain tissue, ***Org. Biomol. Chem.*,** 2019, 17, 5230-5233. [**Selected as inside front cover of this issue**]

55. S. Kundu, H. S. Sarkar, S. Das and **P. Sahoo***, Easy and rapid estimation of ammonia in cold storage potatoes: Precautions in environment, ***New J. Chem.***, 2019, 43, 6843-6847.

56. Rare crystal structure of open spirolactum ring along with a closed ring form of a rhodamine derivative: Sensing of Cu^{2+} ions from Spinach. Sujoy Das, Kari Rissanen and **Prithidipa Sahoo***, ***ACS Omega***, 2019, 4, 5270−5274.

57. Rapid Consumption of H_2S from our daily diet—Determination by a simple chemosensing method, AyndrilaGhosh, Sujoy Das, ShampaKundu, Himadri Sekhar Sarkarand **Prithidipa Sahoo***, ***ACS Omega***, 3, 11617, 2018.

58. 5-Hydroxymethylcytidine: Quantification in human liver cancer cell by a simple chemosensor. Himadri Sekhar Sarkar, Shampa Kundu, Sujoy Das, and **PrithidipaSahoo***, ***RSC Advances***, 8, 39893, 2018.

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60. Visualisation of DCP, a nerve agent mimic, in Catfish brain by a simple chemosensor, Himadri Sekhar Sarkar, Ayndrila Ghosh, Sujoy Das, Pulak Kumar Maiti, Sudipta Maitra, Sukhendu Mandal and **Prithidipa Sahoo*, *Nature Sci. Rep***., 8:3402, February, 2018.

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63. "Turn-on" fluorescence sensing of cytosine: Development of a chemosensor for *in vivo* quantification of cytosine, HimadriSekharSarkar, Sujoy Das, DebasishMandal, MdRaihanUddin, SukhenduMandal and **Prithidipa Sahoo***, ***RSC Adv***.,7, 54008-54012, 2017.

64. Selective Recognition and Quantification of 2,3-Bisphosphoglycerate in Human Blood Samples by a Rhodamine Derivative, HimadriSekharSarkar, Sujoy Das, MdRaihanUddin, SukhenduMandal and **Prithidipa Sahoo***, ***Asian J. Org. Chem***., 6, 71, 2017. [**Selected as cover page]**

65. Selective fluorescence sensing and quantification of uric acid by naphthyridine-based receptor in biological sample, **Prithidipa Sahoo***, Sujoy Das, Himadri Sekhar Sarkar, Kalipada Maiti, Md Raihan Uddin and Sukhendu Mandal, ***Bioorg. Chem***., 71, 315-324, 2017.

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