

# Dr. Swapnadip Roy

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## Academic Profile:

- ✚ B.Sc. (Chemistry Honours): Bankura Christian College, University of Burdwan
- ✚ M.Sc. (Chemistry): National Institute of Technology Rourkela
- ✚ PhD in Chemistry: National Institute of Technology Durgapur

## Research & Professional Experience:

- ➡ **State Aided College Teacher (SACT)**, Dept. of Chemistry, Bankura Sammilani College under Bankura University (August, 2010- till date).
- ➡ Working as a **Visiting Faculty** in the Department of Chemistry, Bankura University (2022-till date).
- ➡ Post PhD Research Work, Dept. of Chemistry, NIT Durgapur (2022-till date).
- ➡ **Ph.D.**, Guide: **Dr. Sujit. S. Panja**, Dept. of Chemistry, NIT Durgapur. Thesis Title: *“Development and photophysical study of fluorescein based fluorescent sensors and their different applications”*
- ➡ Worked as a **Visiting Faculty** in the Department of Chemistry, **NSHM Knowledge Campus**, Durgapur, West Bengal, India, during October-November, 2011.
- ➡ **M.Sc. Dissertation**, Guide: **Dr. Usha Subuddhi**, Dept. of Chemistry, NIT Rourkela (2009-2010). Title: *“Self Association of Bile Salts in Aqueous Medium – A Spectroscopic Investigation using Diphenylhexatriene”*.
- ➡ **Summer intern fellow**, Guide: **Dr. Subhas Chandra Bhattacharya**, Dept. of Chemistry, Jadavpur University (2008-2009) Title: *“Effect of Homogenous Solvents on the Photophysical Properties of a Biologically important Coumarin Derivative”*.

## Research Interest:

Fluorescence Spectroscopy, Photophysical studies of dyes and surfactants, Quantum Chemical Calculations, Computational Applications in Chemistry.

**Vidwan Profile Link:** <https://vidwan.inflibnet.ac.in/profile/231210>

**Google Scholar Link:** <https://scholar.google.com/citations?user=LRN2Z0QAAAJ&hl=en&authuser=3>

**Teaching Experiences:** Undergraduate: **15+ years**; Postgraduate: **7+ years**.

## Honours & Affiliation:

Life member of The Wesleyan Journal of Research, ISSN: 0975-1386 (Membership No. WJR/93)

## Selected Publications:

Sl. No.	Title, Authors, Journal, Publishing year (starting from recent)	Published by
13.	“Synthesis, crystal structure, Hirshfeld surface analysis, and characterization of a new 1-D dicyanamide-bridged, polymeric Mn(III) complex”	Transition Metal Chemistry DOI: <a href="https://doi.org/10.1007/s11243-024-00589-4">https://doi.org/10.1007/s11243-024-00589-4</a> Published: 29 June 2024

	Uttam Mandal, Corrado Rizzoli, Bikash Chakraborty, <b>Swapnadip Roy</b> , Debasis Bandyopadhyay and Santanu Mandal	<b>Impact Factor: 1.60</b> 2024 (Springer Link)
12.	“A brief review on nanoparticle based mercury sensing by optical method” <b>Swapnadip Roy</b> and Swadesh Mandal	Journal of Scientific Enquiry DOI: <a href="https://doi.org/10.54280/21/09">https://doi.org/10.54280/21/09</a> Vol: 1, Pages: 53-73 (2021)
11.	“A New Thiophene-Appended Fluorescein-Hydrazone-Based Chromo-Fluorogenic Sensor for the Screening of Hg <sup>2+</sup> Ions in Real Water Samples” <b>Swapnadip Roy</b> , Tapashree Mondal, Dhananjay Dey, Manoj V. Mane and Sujit S. Panja*	Chemistry Select (ISSN: 2365-6549) DOI: <a href="https://doi.org/10.1002/slct.202102692">https://doi.org/10.1002/slct.202102692</a> <b>Impact Factor: 2.00</b> Volume: 6 (2021) 1-17 (Wiley)
10.	“Deeper insight into the multifaceted photodynamics of a potential organic functional material emphasizing aggregation induced emission enhancement (AIEE) properties” Tapashree Mondal, <b>Swapnadip Roy</b> , Indranil Mondal, Monaj V Mane and Sujit S Panja	Journal of Photochemistry & Photobiology, A: Chemistry (ISSN:1010-6030) <b>Impact Factor: 4.291;</b> DOI: <a href="https://doi.org/10.1016/j.jphotochem.2020.112998">https://doi.org/10.1016/j.jphotochem.2020.112998</a> Volume: 406; Page:112998, Elsevier (2020)
9.	“A Review of Turn-On Fluorescent Sensors For Some Selected Toxic Inorganic Cations and Anions” <b>Swapnadip Roy</b> and Samir K. Roy*	<b>Purakala (UGC Care Journal)</b> ISSN:0971-2143 Vol-31-Issue-34-May -2020 Page: 220-228
8.	“Ratiometric Fluorescence Sensing of Cu(II): Elucidation of FRET Mechanism and Bio-Imaging Application” Anindita Sikdar, <b>Swapnadip Roy</b> , Ram B. Mahto, Sudit S. Mukhopadhyay, Kakali Haldar and Sujit S. Panja*	Chemistry Select (ISSN: 2365-6549); DOI: <a href="https://doi.org/10.1002/slct.201802818">https://doi.org/10.1002/slct.201802818</a> <b>Impact Factor: 2.00;</b> Volume: 3 (2018) 13103-13109 (Wiley)
7.	“A multi-responsive thiosemicarbazone-based probe for detection and discrimination of group 12 metal ions and its application in logic gates” Soma Sarkar, Tapashree Mondal, <b>Swapnadip Roy</b> , R. N. Saha, Asish Kumar Ghosh and Sujit S. Panja*	New Journal of Chemistry (ISSN:1369-9261) <b>Impact Factor: 3.591;</b> DOI: <a href="https://doi.org/10.1039/C8NJ02011F">https://doi.org/10.1039/C8NJ02011F</a> Volume: 42 (2018) 15157-15169 (RSC Publishing)
6.	“Logic gate-based Rhodamine-methionine conjugate highly sensitive fluorescent probe for Hg <sup>2+</sup> ion and its application: An experimental and theoretical study” Anindita Sikdar, <b>Swapnadip Roy</b> , Subrata Dasgupta, Soumita Mukherjee, Sujit S. Panja*	Sensors and Actuators B (ISSN: 0925-4005); <b>Impact Factor: 8.0;</b> DOI: <a href="https://doi.org/10.1016/j.snb.2018.02.129">https://doi.org/10.1016/j.snb.2018.02.129</a> Volume: 263 (2018) 298–311 (Elsevier)
5.	“Thiophene Appended Dual Fluorescent Sensor for Detection of Hg <sup>2+</sup> and Cysteamine” Soma Sarkar, <b>Swapnadip Roy</b> , R. N. Saha and Sujit S. Panja*	Journal of Fluorescence (ISSN: 1573-4994) <b>Impact Factor – 2.60;</b> DOI: <a href="https://link.springer.com/article/10.1007/s10895-017-2204-1">https://link.springer.com/article/10.1007/s10895-017-2204-1</a> Volume. 23(2017) 495-501. (Springer Link.)
4.	“Pyrene-based simple but highly selective fluorescence sensor for Cu <sup>2+</sup> ion via static excimer mechanism” Soma Sarkar, <b>Swapnadip Roy</b> , Anindita Sikdar, R. N. Saha and Sujit S. Panja*	ANALYST (ISSN:0003-2654); <b>Impact Factor – 4.616;</b> DOI: <a href="https://doi.org/10.1039/C3AN00928A">https://doi.org/10.1039/C3AN00928A</a> Volume: 138 (2013) 7119–7126. (RSC Publishing)
3.	“Rhodamine-based Cu <sup>2+</sup> -selective fluorosensor: Synthesis, Mechanism, and Application in living cells” Anindita Sikdar <sup>a</sup> , <b>Swapnadip Roy</b> <sup>a</sup> , Kakali Haldar <sup>b</sup> , Soma Sarkar <sup>a</sup> and Sujit S. Panja <sup>a</sup>	Journal of Fluorescence (ISSN: 1573-4994) <b>Impact Factor – 2.60;</b> DOI: <a href="https://link.springer.com/article/10.1007/s10895-013-1169-y">https://link.springer.com/article/10.1007/s10895-013-1169-y</a> Volume. 23(2013)495-501. (Springer Link.)
2.	“Effect of solvent environment on the Photophysics of a newly synthesized bioactive 7-oxy(5-selenocyanatopentyl)-2H-1-benzopyran-2-one.” Sayaree Dhar, Dipak Kumar Rana, Somnath Singha Roy, <b>Swapnadip Roy</b> , Sudin Bhattacharya, Subhash Chandra Bhattacharya.	Journal of Luminescence (ISSN: 0022-2313) <b>Impact Factor – 3.599;</b> DOI: <a href="https://doi.org/10.1016/j.jlumin.2011.11.017">https://doi.org/10.1016/j.jlumin.2011.11.017</a> Volume. 132(2012)957-964. (Elsevier)
1.	“A Rhodamine-Based Dual Chemosensor for Cu(II) and Fe(III).” Anindita Sikdar & Sujit Sankar Panja* & Partha Biswas & <b>Swapnadip Roy</b> .	Journal of Fluorescence (ISSN: 1573-4994) <b>Impact Factor – 2.60;</b> DOI: <a href="https://link.springer.com/article/10.1007/s10895-011-0977-1">https://link.springer.com/article/10.1007/s10895-011-0977-1</a> Volume. 22(2011) 443-450. (Springer Link)

### Sponsored/ Consultancy Projects:

*Studies in the micellization behavior of Bile Salts in aqueous medium – Photophysical, Chemical and Thermodynamic Consideration.* File No. *F.PSW-003/13-14(ERO)*, ID No. *WBI-009*; Sl. No. *219562*, dated: *18-Mar-2014*. Funding Agency: **UGC/Minor Research Project**; Duration: 2014-2016.

### Area of Teaching:

**UG Courses (Theory):** Surface Chemistry (Solutions), IT Skills for Chemists, Chemical Kinetics, Thermodynamics and Applications in Thermodynamics, Statistical Mechanics, Photoexcited Processes, Electrical Properties of Molecules.

**PG Courses (Theory):** Physical Photochemistry & Spectroscopy, Chemical Kinetics, Statistical Thermodynamics, Biophysical Chemistry.

### UG & PG Laboratory:

1. Determination of relative viscosity of unknown solution (glycerol, sucrose) at various concentrations using Ostwald Viscometer.
2. Determination of surface tension of a liquid at various concentrations using Stalagmometer.
3. Determination of pH of unknown buffer solution by colour matching method.
4. Determination of surface tension of a liquid using Stalagmometer.
5. Determination of CMC from surface tension measurements.
6. Verification of Beer and Lambert's Law for  $\text{KMnO}_4$  and  $\text{K}_2\text{Cr}_2\text{O}_7$  solution.
7. Study of kinetics of  $\text{K}_2\text{S}_2\text{O}_8 + \text{KI}$  reaction, spectrophotometrically.
8. Determination of pH of unknown buffer, spectrophotometrically.
9. Spectrophotometric determination of CMC.
10. Determination of solubility of sparingly soluble salt in water, in electrolyte with common ions and in neutral electrolyte (using common indicator).
11. Potentiometric titration of Mohr's salt solution against standard  $\text{K}_2\text{Cr}_2\text{O}_7$  solution.
12. Determination of  $K_{sp}$  for  $\text{AgCl}$  by potentiometric titration of  $\text{AgNO}_3$  solution against standard  $\text{KCl}$  solution.
13. Study of kinetics of  $\text{K}_2\text{S}_2\text{O}_8 + \text{KI}$  reaction, Colorimetrically / Spectrophotometrically.
14. Study of phenol-water phase diagram.
15. Spectrophotometric determination of CMC.
16. pH-metric titration of acid (mono and di-basic) against strong base.
17. To determine the rate constant of acid catalyzed hydrolysis of an ester in a micellar media.
18. To verify Ostwald dilution law and determine the  $K_a$  of a weak acid.
19. To determine the composition of a mixture of acetic acid, sodium acetate and ammonium acetate by conductometry.
20. To investigate the kinetics of inversion of canesugar by polarimeter.
21. To determine the composition of metal-ligand complex by Job's method.

### National and International Seminars:

- ◆ Delivered an Oral Presentation in the **International Conference on "Chemistry at the Frontier"** organized by Department of Chemistry, Bankura Sammilani College & IQAC during 10<sup>th</sup> February, 2024.
- ◆ Presented a poster in the **International Seminar on "Microbes and Social Equity"** organized by Microbiologist Society of India and Dept. of Microbiology, Bankura Sammilani College & IQAC during December 22<sup>nd</sup> – 23<sup>rd</sup>, 2023.
- ◆ Participated in the National Seminar entitled **"Mimicking Photosynthesis by functionalization of Metal-Organic Frameworks"** organized by Dept. of Chemistry, Bankura Christian College in collaboration with The Chemical Society of the Dept. of Chemistry, Bankura Christian College during September 15<sup>th</sup>, 2023.
- ◆ Oral Presentation in **"A One Days National Symposium on "Spectroscopy and its Applications in Chemistry"** organized by Dept. of Chemistry, Bankura Sammilani College, in association with **Indian Photobiology Society** Jadavpur, Kolkata, held during April 12<sup>th</sup>, 2023.

- ◆ Participated and presented a paper in **5<sup>th</sup> Regional Science & Technology Congress 2022-2023**, Region-6 Bankura, Birbhum and Purulia, jointly organized by Department of Science and Technology and Biotechnology, Government of West Bengal & Bankura University during 9<sup>th</sup> – 10<sup>th</sup> January, 2023.
- ◆ Oral Presentation in “**A Three Days International Conference on Recent Development in Chemistry (RDC 2021)**”, organized by Dept. of Chemistry, NITD, held online during March 3<sup>rd</sup> to 5<sup>th</sup>, 2021.
- ◆ **Invited Lecture** in the UGC Sponsored Seminar “**Microbial World 2017: National Seminar on Applied Microbiology**” organized by TEQUIP University of North Bengal, during September 4<sup>th</sup>, 2017.
- ◆ Presented a poster in **TEQIP-II, DST, and CSIR** sponsored 3-days **National Conference on Recent Developments in Chemistry (RDC-2016)** organized by Dept. of Chemistry, NITD, during October 4<sup>th</sup> to 6<sup>th</sup>, 2016.
- ◆ Participated in the TEQIP-II sponsored five days short term course on “**Methodology and Ethics in Research (STCMER-2016)**” organized by NITD during September 19<sup>th</sup> to 23<sup>rd</sup>, 2016.
- ◆ Presented a poster in the Two-day UGC sponsored **National Seminar on “Environmental Education – A Need of the Day”** organized by Bankura Zilla Saradhamani Mahila Mahavidyalaya in collaboration with Bankura Christian College held on September, 2016.
- ◆ Demonstrated Analytical Techniques in TEQIP-II sponsored Short-term Training Programme on “**Instrumental Application and Chemical Analysis for Environmental Samples**” organized by Dept. Chemistry, NITD during June 27<sup>th</sup> to July 3<sup>rd</sup>, 2016.
- ◆ Presented a poster in National Conference on “**Recent Development in Green Chemistry**” organized by Dept. of Chemistry, Gushkara Mahavidyalaya, during March 22<sup>nd</sup>, 2015. (**2<sup>nd</sup> Prize Award**).
- ◆ Demonstrated Analytical Techniques in TEQIP-II sponsored **Short-term Training Programme** on “**Instrumental Application and Chemical Analysis for Environmental Samples**” organized by Dept. Chemistry, NITD during November 24<sup>th</sup> to 30<sup>th</sup>, 2014.
- ◆ Presented a poster in National Conference on “**Advances in Chemistry and its Biological & Industrial Relevance**” (**ACBIR – 2014**) organized by Dept. of Chemistry, NIT Rourkela, CSIR, BRUKER PVT. LTD. during January 10<sup>th</sup> to 11<sup>th</sup>, 2014.
- ◆ Presented a poster in **TEQIP-II, DST, and CSIR** sponsored 3-days **National Conference on Recent Developments in Chemistry (RDC-2013)** organized by Dept. of Chemistry, NITD, during October 3<sup>rd</sup> to 5<sup>th</sup>, 2013.
- ◆ Presented a poster in **14<sup>th</sup> CRSI National Symposium in Chemistry (NSC-14)** held at NIIST, Thiruvananthapuram during February 3<sup>rd</sup> to 5<sup>th</sup>, 2012.
- ◆ Participated in the **UGC sponsored National Seminar on “Recent Trends in Chemical Science”** organized by Dept. of Chemistry, Bankura Christian College during November 18<sup>th</sup> to 19<sup>th</sup>, 2011.
- ◆ Participated in the **3rd Asia Pacific Symposium on Radiation Chemistry & DAE-BRNS Tenth Biennial Trombay Symposium of Radiation and Photochemistry (APSRC-TSRP 2010)**, Lonawala, India during 14-17<sup>th</sup> September, 2010. Usharani Subuddhi and Swapnadip Roy, Effect of Bile Salt Micellar Environment on the Spectral Properties, Isomerisation and Aggregation of 1,6-Diphenylhexatriene.

### **Extracurricular Activities:**

- ◆ Participated as a **COACH** in the **Inter College State Sports & Games Championship 2024-2025** organized by Education Directorate, Government of West Bengal.
- ◆ Acted as Internal Examiner, External Examiner & Paper Setter in various UG and PG level of examinations under The University of Burdwan and Bankura University.
- ◆ Participated as a **COACH** in the **Inter College State Sports & Games Championship 2022-2023** organized by Education Directorate, Government of West Bengal.

- ◆ Completed an online short term course on “**E Learning Management System**” conducted by **UDBODHAN** (Centre for Research Rehabilitation and Social Welfare) during the month of July, 2020.
- ◆ Obtained **Certificate of Honour** from the University of Burdwan by representing Bankura Christian College Cricket Team (as a CAPTAIN) as a Zonal Champion Team in the Inter University Cricket Tournament - 2005-2006, held at Eden Gardens, Kolkata, organized by Cricket Association of Bengal (CAB).
- ◆ Obtained a **Certificate of Honour** from the **District Sports Association (DSA)** of Bankura, by representing the District Cricket Team in Inter District Cricket Tournament in the year of 2005.
- ◆ Obtained **Certificate of Merit** and **Silver Medal** from the **Cricket Association of Bengal (CAB)** by representing Kenduadihi Boys High School Cricket Team, in the Inter School Cricket Tournament in the year of 2000-2001.



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