Bappaditya Naskar, M. Sc., Ph. D.

Assistant Professor (Stage II)
Department of Chemistry
Sundarban Hazi Desarat College, University of Calcutta
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Professional Experiences

- **Assistant Professor -** Department of Chemistry, Sundarban Hazi Desarat College, University of Calcutta. Since **March, 2015**
- **Guest Faculty-** Department of Chemistry, Presidency University, 2017-2018
- **Post Doctoral Fellow** - Institut de Chimie Séperative de Marcoule, CEA Marcoule, France, from **September, 2013 to December, 2014.** Advisors**:** Prof. O. Diat and Prof. P. Bauduin

Education

- **Ph. D. (Science)**: Thesis: **Physicochemical Studies on Polymers and Surfactants in Solution and their Mutual Interaction**. Jadavpur University, Kolkata, India. May, 2013. Advisor: Prof. S. P. Moulik
- **M. Sc.** in **Chemistry** with specialization in **Physical Chemistry,** Jadavpur University, August, 2008
- **B. Sc.** in **Chemistry** with major and minor in Physics and Mathematics, Jadavpur University, August, 2006.
- **Higher Secondary,** W. B. C. H. S. E., July, 2003
- **Secondary**, W. B. B. S. E., June, 2001

Fellowships, Awards, and Membership

- Post Doctoral Fellowship - **'ANR Grant'** Funded by Govt. of France
- Post Doctoral Fellowship – Konan University, Japan (not availed)
- One of the Best oral presentation awards in 20th Ostwald-Colloquium at MPI, Mainz, Germany.
- Qualified Joint CSIR - UGC, Govt. of India, December 2007, National Eligibility Test in **CHEMICAL SCIENCES**
- Qualified Graduate Aptitude Test in Engineering, 2008 organized by Indian Institute of Technology, Kanpur, India.
- Junior and Research Fellowship from UGC, Govt. of India in 2008-2010
- Senior Research Fellowship from UGC, Govt. of India in 2010-2013

Service and Outreach

- Life member of Indian Society for Surface Science and Technology (Member ID: L/M-N-20)
- General member of Association Française des Utilisateurs de Rayonnement Synchrotron et XFEL since 2014 (French Association of Synchrotron Radiation Users and XFEL)
- Executive Committee member of Indian Society for Surface Science and Technology since January, 2020
- Member of American Chemical Society since June, 2020 (Member ID: 30702236)
- Co-ordinating Editor of J. Surf. Sci. Tech. since February, 2021
- Reviewer of ACS, Elsevier, Wiley, MDPI published scientific journals.
- Joint NAAC Steering Committee Coordinator- SHD College (2015-16)
- Boys' Hostel Superintendent- SHD College (2017-18)
- Sports Sub-committee Convener- SHD College (Since July, 2018)
- RUSA Project Monitoring Unit Convener – SHD College (Since October, 2020)
- Teachers' Council Secretary –SHD College (Since August, 2022)

Teaching (B. Sc.)

- Atomic structure
- Gaseous/liquid/solid State
- Chemical Kinetics
- Colloid Chemistry
- Chemical Thermodynamics
- Electrochemistry
- Quantum Chemistry, Photochemistry & Spectroscopy

Sponsored project

Serial No	Title	Funding agency	Status	Amount (Rs.)
1	Physicochemical Studies on Surfactant-Based Catanionic Coacervates and Their Diverse Applications	SERB, DST	2024 (Ongoing)	42,97,832/-

Ph.D. students

Serial No	Name	Thesis Title	Supervisor/s	Year of Awarding
1	Dipali Roy, SRF	Investigation of surface and solution behavior of amphiphiles exploring the scopes towards synthesis of nanoparticles	Dr. Tanushree Bala & Dr. Bappaditya Naskar	…
2	Debadyuti Mahapatra, JRF (Project Fellow)	……	Dr. Bappaditya Naskar	….

Publications in International Peer Reviewed Journals (*corresponding author)

https://scholar.google.co.in/citations?bappadityanaskar

ORCID: 0000-0001-9417-296X

33. D. Roy, **B. Naskar***, T. Bala*, A thermodynamics approach to the phase separation phenomena and micellization of Tetronic 701 and Tetronic 90R4 in aqueous solutions, **Industrial & Engineering Chemistry Research**, 2024 (submitted)

32. D. Roy, **B. Naskar***, T. Bala*, Catalytically Active Gold Nanoparticles on Star Block Co-polymer Matrix: Synthesis of Nanocomposite Film Exploring Langmuir Blodgett Technique, **Langmuir, 2024** (Under review)

31. D. Roy, **B. Naskar***, T. Bala*, Effect of Hofmeister Anions Series on the Langmuir film of Tetronic 90R4 and Tetronic 701 Block Copolymers, **Langmuir**, **2024** (accepted)

30. A. K. Rakshit, **B. Naskar***, S. P. Moulik, Post Centennial of Micelles: An Overview. **Current Science, 2024,** (accepted) (I.F. 1.0)

29. D. Roy, B. Roy, **B. Naskar***, T. Bala*, Detailed study on interfacial interaction between different polyoxometalates and tetronic copolymers exploring Langmuir-Blodgett technique, **Langmuir**, **2024** (DOI: 10.1021/acs.langmuir.4c00317) (I.F. 3.9) [Appeared as front cover article]

28. S. P. Moulik, A. K. Rakshit, **B. Naskar***, Physical Chemical Properties of Surfactants in Solution and their Applications: A Comprehensive Account. ***J. Surfactants and Detergents,* 2024** (DOI: 10.1002/jsde.12757) [Invited Article for Special Issue] (I.F. 1.6)

27. S. P. Moulik, A. K. Rakshit, A. Pan*, **B. Naskar***, An Overview of Coacervates: The Special Disperse State of Amphiphilic and Polymeric Materials in Solution. ***Colloids and Interfaces*** 6, **2022**, 45. [Invited Article for Special Issue, among top cited and viewer article for 2022-2024 (24 months from publication)] (I.F. 2.4)

26. A. K. Rakshit, **B. Naskar**, S. P. Moulik*, Colloid stability and Schulze – Hardy rule: Its origin and new inputs. ***Acc. Chem. Edu. Research*** 1, **2022**, 11. [Invited Article for First Issue]

25. A. K. Rakshit, **B. Naskar***, S. P. Moulik, Performance of Modified Schulze-Hardy Rule on the Stability of Nano, Micro, and Macro Colloidal Dispersions: A Comprehensive Account. ***Colloids Surfaces A*** 626**, 2021,** 127084. (I.F. 5.2)

24. D. Roy, **B. Naskar***, T. Bala*, Exploring Langmuir-Blodgett Technique to Investigate Effect of Various Subphase Conditions on Monolayers Formed by Amphiphilic Block Co-polymers Tetronic 701 and Tetronic 90R4. ***Colloids Surfaces A*** 625**, 2021,** 126924. (I.F. 5.2)

23. S. P. Moulik, A. K. Rakshit, **B. Naskar***, Evaluation of Non-Ambiguous Critical Micelle Concentration of Surfactants in Relation to Solution Behaviors of Pure and Mixed Surfactant Systems: A Physicochemical Documentary and Analysis. ***J. Surfactants and Detergents*** 24**, 2021,** 535**.** [Invited Article for Special Issue, Top Cited Article 2021-22] (I.F. 1.6)

22. A. K. Rakshit, **B. Naskar***, S. P. Moulik, Stability of Hydrophobic Colloids: Perspectives and Current Opinion. ***J. Disp. Sci. Tech.*** 42, **2021,** 503. (I.F. 2.2)

21. L. Girad*, **B. Naskar**, J. F. Dufreche, J. Lai, O. Diat, P. Bauduin, A Thermodynamic Model of Non-Ionic Surfactants' Micellization in the Presence of Polyoxometalates. ***J. Mol. Liquids*** 293, **2019**, 111280. (I.F. 6.0)

20. S. P. Moulik, **B. Naskar**, A. K. Rakshit, A Brief Account of the Current Status of Enthalpy Entropy Compensation Phenomenon. ***Current Science*** 117, **2019**, 1286. (I.F. 1.0)

19. A. K. Rakshit, **B. Naskar**, S. P. Moulik*, Commemorating 75 years of Microemulsion: A Journey Forward, ***Current Science*** 116, **2019**, 898. [Appeared as front cover article] (I.F. 1.0)

18. T. Bucheker, X. L. Goff, **B. Naskar**, A. Pfitzner, O. Diat, P. Bauduin*, Polyoxometalate/Polyethylene Glycol Interactions in Water: From Nanoassemblies in Water to Crystal Formation by Electrostatic Screening. ***Chem. European J.*** *23,* **2017**, 8434. [Appeared as back cover article] (I.F. 4.3)

17. **B. Naskar,** O. Diat, V. Nardello-Rataj, P. Bauduin*, Nanometer-size Polyoxometalate Anions Adsorb Strongly on Neutral Soft Surfaces. ***J. Phys. Chem. C*** *119*, **2015**, 20985. (I.F. 3.7)

16. **B. Naskar**, S. Ghosh, S.P. Moulik*, Interaction of Normal and Reverse Pluronics (L44 and 10R5) and their Mixtures with Anionic Surfactant Sodium N-Dodecanoyl Sarcosinate. ***J. Colloid Interface Sci.*** *414*, **2014**, 82. (I.F. 9.9)

15. D. Sardar, **B. Naskar**, A. Sanyal, T. Bala*, S. P. Moulik*, Organic-Inorganic Hybrid: A Novel Template for Synthesis of Nanostructured Ag. ***RSC Advances*** *4,* **2014**, 3521. (I.F. 3.9)

14. S. Majumder, **B. Naskar**, S. Ghosh, C.-H. Lee, C.-H. Chang, S. P. Moulik, and A. K. Panda*, Synthesis and Characterization of Surfactant stabilized Nanocolloidal Dispersion of Silver Chloride in Aqueous medium. ***Colloids and surfaces A*** *443*, **2014**, 156. (I.F. 5.2)

13. A. Pan, **B. Naskar**, et al., Micellization and Related Behavior of Sodium Dodecylsulfate in Mixed Binary Solvent Media of Tetrahydrofuran (Tf) and Formamide (Fa) with Water: A Detailed Physicochemical Investigation. ***Soft Matter*** *10*, **2014**, 5682. (I.F. 3.4)

12. S. Das, **B. Naskar**, S. Ghosh*, Influence of Temperature and Organic Solvents (isopropanol and 1,4-dioxane) on the Micellization of Cationic Gemini Surfactant (14-4-14). ***Soft Matter*** *10*, **2014**, 2863. (I.F. 3.4)

11. **B. Naskar**, S. Mandal, S. P. Moulik*, Amphiphilic Activities of Anionic Sodium Cholate (NaC), Zwitterionic 3-[(3-cholamidopropyl)dimethylammonio]-1-propanesulfonate (CHAPS) and their Mixtures: A Comparative Study. ***Colloids Surfaces B*** *112*, **2013**, 155. (I.F. 5.8)

10. **B. Naskar**, A. Dey, S. P. Moulik*, Counter-ion Effect on Micellization of Ionic Surfactants: A Comprehensive Understanding with Two Representatives. Sodium Dodecylsulfate (SDS) and Dodecyltrimethyalammonium Bromide (DTAB). ***J. Surfactants and Detergents*** *16*, **2013**, 785. (I.F. 1.6)

9. I. Mukherjee, S. Mukherjee, **B. Naskar**, S. Ghosh, S. P. Moulik*, Interfacial and Bulk Behavior of two Phosphonium Based Ionic Liquids. ***J. Colloid Interface Sci.*** *395*, **2013**, 135. (I.F. 9.9)

8. A. Pan, S. S. Mati, **B. Naskar**, S. C. Bhattacharya, S. P. Moulik*, Self-Aggregation of MEGA-9 (N-nonayl-N-methyl-D-glucamide) in Aqueous Medium: Physicochemistry of Interfacial and Solution Behaviors with Special Reference to Formation Energetics and Micelle Microenvironment. ***J. Phys. Chem. B*** *117*, **2013**, 7578. (I.F. 3.3)

7. **B. Naskar**, A. Dan, S. Ghosh, V. K. Aswal, S. P. Moulik*, Revisiting the Self-aggregation Behavior of Cetyltrimethylammonium Bromide in Aqueous Sodium Salt Solution with Varied Anions. ***J. Mol. Liquids*** *170*, **2012**, 1. (I.F. 6.0)

6. **B. Naskar**, S. Ghosh, S. P. Moulik*, Solution Behavior of Normal and Reverse Triblock Co-polymers (Pluronic L44 and 10R5) individually and in Binary Mixture. ***Langmuir*** *28*, **2012**, 7134. (I.F. 3.9)

5. M. Chakraborty, F. –W. Hsiao, **B. Naskar**, C. –H. Chang, A. K. Panda*, Surfactant-Assisted Synthesis and Characterization of Stable Silver Bromide Nanoparticles in Aqueous Media. ***Langmuir*** *28*, **2012**, 7282. (I.F. 3.9)

4. A. Pan, **B. Naskar**, et al., Amphiphile Behavior in Mixed Solvent Media I: Self-aggregation and Ion-association of Sodium Dodecylsulfate in 1, 4-Dioxane - Water and Methanol - Water Media. ***Langmuir*** *28*, **2012**, 13830. (I.F. 3.9)

3. **B. Naskar**, S. Ghosh, G. Sugihara, S. P. Moulik*, Behavior of the Amphiphile CHAPS Alone and in Combination with the Biopolymer Inulin in Water and Isopropanol - Water Media. ***Langmuir*** *27*, **2011**, 9148. (I.F. 3.9)

2. **B. Naskar**, A. Dan, S. Ghosh, S. P. Moulik*, Characteristic Physicochemical Features of the Biopolymer Inulin in Solvent Added and Depleted States. ***Carbohydrate Polymers*** *81*, **2010**, 700. (I.F. 11.2)

1. **B. Naskar**, A. Dan, S. Ghosh, S. P. Moulik*, Viscosity and Solubility Behavior of the Polysaccharide Inulin in Water, Water + Dimethyl Sulfoxide, and Water + Isopropanol Media. ***J. Chem. Eng. Data*** *55*, **2010,** 2424. (I.F. 2.6)

Conference Proceedings

2. Self-aggregation of the of the Amphiphile CHAPS and its interaction with the Biopolymer Inulin in Water and Isopropanol-Water Media, **B. Naskar**, S. Ghosh, S.P. Moulik in Trends in Surface Science and Related areas by Indian Society for Surface Science and Technology, November 19, 2010.

1. Self-aggregation and Related Properties of Ionic Surfactant in Aquo-organic Solvent Media, A. Pan, **B. Naskar**, S. C. Bhattacharya, S.P. Moulik in Trends in Surface Science and Related areas by Indian Society for Surface Science and Technology, November 19, 2010.

Book Chapter

1. Physicochemical and Thermodynamic Aspects of Langmuir Monolayer and Langmuir-Blodgett Film, **B. Naskar** and S. P. Moulik, in Langmuir-Blodgett Films: from Fundamentals to Application, Edited by Prof. S. A. Hussain, **Publisher**: Elsevier, ISBN-10: 0323857868 / ISBN-13: 978-0323857864 (**2023,** accepted for publication)

Selected Conference/Seminars/ Meeting Contribution

17. International **Conference on Composite Materials for Environmental Protection & Remediation (ICCMEPR-2024)**, Organized by Gram Bharati College and Chemical Research Society of India, Bihar, July 2-3, 2024. **Invited Speaker** on A Study of Langmuir Blodgett Technique in the Synthesis of Catalytically Active Gold Nanoparticles Nanocomposite Film by Star Block Co-polymer Mediated Synthesis.

16. **International Seminar on Pollution and Biosafety: Issues and Concerns** organized by Department of Chemistry, Raja Rammohun Roy Mahavidyalaya, Hooghly, WB, August 3, 2022. **Oral Presentation** on Evaluation of Non-ambiguous Critical Micelle Concentration of Surfactants and Applicability of Cloud Point Extraction of Metal Ions from Waste Water

15. **International Seminar on Sundarbans: Science to Society** organized by Sundarban Hazi Desarat College, January 26, 2020. **Oral Presentation** on Ion Flotation: A Cost Effective Process for Waste Water Treatment.

14. **International Seminar on Itinerary of Classical to Modern Era of Chemistry** organized by Department of Chemistry, The Bhawanipur Education Society College, Kolkata, November 4, 2019. **Poster Presentation** on Hybrid Inorganic-Organic Materials Based on Salting In Property.

13. **International Conference on Emerging Materials** organized by Department of Chemistry and Chemical Technology, Vidyasagar University, April 20-21, 2017. **Poster Presentation** on Polyoxometalate-Organic Hybrid Assemblies by Adsorption.

12. **Trends in Surface Science and Related Areas** organized by Indian Society for Surface Science and Technology, and Department of Chemistry, Ramkrishna Mission Vivekananda Centenary College, Rahara, July 28, 2017. **Invited Speaker** on Interaction of Polyoxometalate with Non-ionic Surfactant/Polymer in Water.

11. **National Symposium on Recent Advances in Chemistry and Industry 2016** organized by Indian Chemical society, August 2-3, 2016. **Oral Presentation** on Nanometersize Polyoxometalate (POM) Anions Adsorb Strongly on Neutral Soft Surfaces.

10. **20th Ostwald-Colloquium "Particles_@_Interfaces"** organized by Max Planck Institute of Mainz, Germany, September 17-19, 2014. **Oral Presentation** on Physico-chemical and Catalytic Properties of Polyoxometalate Surfactants.

9. **ANR Meeting at UPMC, Paris, France:** Solution Behaviors of Native POMs, 13th March, 2014 (Oral presentation)

8. **Trends in Surface Science and Related Areas** organized by Indian Society for Surface Science and Technology, and Department of Pharmaceutical Science, Jadavpur University, 3rd May, 2013. **Invited Speaker** on Interaction of Anionic Surfactant with Block Co-polymer.

7. **Fifteen National Conference on Surfactants, Emulsions and Biocolloids-2011;** organized by Indian Society for Surface Science and Technology and Tripura University, December 27-29, 2011. **Oral Presentation** on Temperature Dependent Physicochemical Properties of Triblock Co-polymer Pluronics in Aqueous Solution.

6. **Trends in Surface Science and Related Areas** organized by Indian Society for Surface Science and Jadavpur University, November 08, 2011. **Invited Speaker** on Counter-ion Effect on Micellization of Ionic Surfactants: A Comprehensive Understanding with Two Representatives, Sodium Dodecyl Sulfate (SDS) and Dodecyltrimethylammonium Bromide (DTAB)

5. **National Conference on Trends in Surface Science and Related Areas** organized by Indian Society for Surface Science and Technology and Centre for Surface Science, Jadavpur University, November 19, 2010. **Poster Presentation** Self-aggregation of the Amphiphile CHAPS and its interaction with the Biopolymer Inulin in Water and Isopropanol-Water

4. **National Seminar on Membranes, Microemulsions and Self-Assembled Systems (MMSAS-2010);** Organized by Sikkim Manipal Institute of Technology, Sikkim, September 28-30, 2010. **Oral presentation** on Solution Behavior of Zwitterionic Biosurfactant and its Interaction with Biopolymer.

3. **National Conference on new Arena in Photosciences** organized by Department of Chemistry and Indian Photobiology Society, Jadavpur University, August 28, 2010. **Oral Presentation** on Micellar Aggregation Number Determination by Fluorescence.

2. **14th National Conference on Surfactants, Emulsions and Biocolloids** (NATCOSEB-XIV); Indian Society for Surface Science and Technology -and University of Kashmir, July 28-30, 2009. **Poster Presentation** on Salt Effect on the Self-aggregation of Cetyltrimethylammonium Bromide (CTAB): A Physicochemical Assessment of the Process Parameters and their Correlation in the Light of Hofmeister (or Lytropic) Series.

1. **National Conference on Frontiers of Colloids, Surface and Nanostructured Systems;** Organiged by Manipur University, North East Chapter, ISSST, Feburay 28-30, 2009. **Oral presentation** on Physicochemical Studies of Inulin: Assessment of its Solution Properties in Aquo-Organic Media and Salt Environment.

Research Highlights and Interests

- Multidisciplinary background in **colloids, polyoxometalates (POMs), interfacial chemistry and materials science**.
- **Extensive knowledge and hands-on experience in** Polymers, Surfactants and Polyoxometalates
- Knowledge and hands-on experience on **ion-separation by flotation** (foaming)
- Preparation of vesicles and their application for drug delivery and their antimicrobial effects
- Synthesis of **coacervates** and their interaction with polymers at the air-water interface
- **Langmuir monolayer** and **Thin film preparation** by Langmuir-Blodgett (LB) technique
- **Nanomaterials and nanocomposite materials:** Synthesis, characterization and applications

Technical Skills

- **Scattering**: Small Angle X-ray and Neutron (SAXS and SANS), Light scattering
- **Microscope**: TEM, AFM and SEM
- **Thermal properties**: Isothernal Titration Calorimetry
- **Interfacial properties**: Tensiometry and Langmuir Film Balance (LB)
- **Bulk properties**: Conductometry, Densiometry, Viscometry, Vapor Pressure Osmometry, etc.
- **Spectroscopy**: Micro Raman, Spectrophotometry, Fluorimetry, X-ray Fluorimetry and IR
- **Flotation:** Separation technique by foaming

Computer skills

- **Software**: Excel, Origin, Msoffice, Adobe, Fit2D, Sas View, Chemdraw, WinLB, Motic Images Advanced, DTS Nano, etc.
- **Web resources**: Sci Finder, SCOPOUS, Web science, Google scholar, etc.

Orientation/ Refreshers Course/ Work Shop Attended

- A One-day **Workshop on AI for Everyone** at Department of Chemistry, The Bhawanipur Education Society College, Kolkata, April 20, 2024.

- **Faculty Development Programme** "on Emerging Areas in Biological and Chemical Sciences" Department of Biosciences & Department of Chemistry, JIS University, Kolkata, September 31- October 04, 21.

- **Refresher Course**: UGC- Sponsored Refresher Course participated in the Inter-disciplinary Refresher Course on Recent Trends in Chemical Sciences at Department of Chemistry, University of Calcutta, March 16-31, 2021.
- **Workshop on "**e-Workshop on Online Teaching, Learning and Evaluation" organized by New Alipore College and K. K. Das College, July 18-19, 2020.
- **5 days FDP on Recent Advances in "**Materials Science" organized by Amity University, Kolkata, July 8-12, 2020.
- **Workshop on "**Maths and Computation for UG Chemistry" organized by Bankim Sardar College, February 12-13, 2020.
- **Workshop on MOOCs, e**-content Development and Open Educational resources-UGC sponsored– at Centre for Microprocessor Applications for Training, Education and Research, Jadavpur University from 11.02.20-17.02.20.
- **Refresher Course**: UGC- Sponsored Refresher Course participated in the Inter-disciplinary Refresher Course on Modern Methods in Earth System Science from 18th September, 2018 to 11th October, 2018 at HRDC - Jadavpur University.
- **Orientation Programme**: UGC- Sponsored Orientation Programme participated at HRDC-University of Calcutta from 30th January, 2018 to 26th February, 2018.
- **Workshop on Electron Microscope**s: Instrumentation and Their Applications in Material Science & Biological Science, November 23-25, 2009.