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Previous Position

- Assistant Professor (W.B.E.S.) and Head of Department, Department of Chemistry, Government General Degree College at Pedong, Dist – Kalimpong, West Bengal, India.

Education

- **Ph. D. in Chemistry**

University of North Bengal, India, 2018

Thesis: *Study to Explore the Formation of Host-Guest Inclusion Complexes of Cyclodextrins with Biologically Active Molecules and Crown Ethers with Ionic Liquids by Spectroscopic and Physicochemical Techniques*

Advisor: *Professor Mahendra Nath Roy*

- **Master of Science in Chemistry with Research**

Indian Institute of Technology Delhi, India, 2012

Thesis: *Synthetic Studies towards Bicyclic Aza Sugar – Steviamine*

Advisor: *Professor N. G. Ramesh*

- **Bachelor of Science in Chemistry**

University of North Bengal, India, University 2nd – Silver Medallist, 2010

Qualified in National Examinations

- **National Eligibility Test (NET-JRF), June 2012**
Council of Scientific & Industrial Research - Junior Research Fellow
All India rank 17
- **Graduate Aptitude Test in Engineering (GATE), 2012**
All India rank 65
- **Joint Admission Test for M.Sc. (JAM), 2010**
All India rank 81

PhD Co-Supervised

(1) Name of Scholar: Debadrita Roy

Title of Thesis: Investigation of Divergent Interactions of some Noteworthy Compounds Prevalent in Host Guest and Solution Chemistry for Enhancing Applicability by Assorted Methodologies

Institution: University of North Bengal

Year of PhD Award: 2024

(2) Name of Scholar: Sanjoy Barman

Title of Thesis: Probing Divergent Interactions of Some Significant Compounds in Different Solution Environments for Enhancing Applicability by Various Methodologies

Institution: University of North Bengal

Year of PhD Award: 2026

Research Experience and Techniques Used

- Study of Supramolecular Chemistry of Cyclodextrins, Crown Ethers and Cucurbiturils.
- Inclusion Complexation of various bio-active molecules, amino acids, nucleosides, neurotransmitters, vitamins, drugs and ionic liquids.
- Characterisation of different Inclusion Complexes.
- Multi-step Organic Synthesis.
- Column chromatography, NMR Spectroscopy, HRMS Spectrometry, ITC Study, UV-Visible Spectroscopy, High Performance Liquid Chromatography, FTIR Spectroscopy, Polarimetry, Microwave reactor, Digital Density meter, Digital Viscometer, Digital pH and Conductivity meter, Digital Refractometer, Digital Surface Tension meter, Ultrasonic Interferometer.

Presentations and Participations

- Orientation Workshop on 'NIRF Methodology and Parameters' by Dept. of Higher Education, Govt. of West Bengal and A.P.C. Roy Govt. College on **9 January, 2026. Participation**
- International Seminar on 'Recent Advancements in Chemistry and Biology' by Darjeeling Govt. College, Dept. of Higher Education, Govt. of West Bengal and Royal Society of Chemistry on **14 August, 2025. Paper Presentation**
- 7th Regional Science & Technology Congress 2024-25 by Dept. of Science and Technology and Biotechnology, Govt. of West Bengal on **24-25 January, 2025. Paper Presentation**
- Workshop towards 'Hands on Training of NAAC Methodology and Preparation' by Siliguri Mahila Mahabidyalaya with Dept. of Higher Education, Govt. of West Bengal on **8 January, 2024. Participation**

- Regional Workshop on 'Methods and Applications of NIRF' by Siliguri Mahila Mahabidyalaya with Dept. of Higher Education, Govt. of West Bengal on *13 August, 2023*. **Participation**
- International Seminar on 'Frontiers in Chemistry 2023 & Prof. C. N. R. Rao Endowment Lecture' by Department of Chemistry, NBU on *13-15 March, 2023*. **Poster Presentation**
- International web-based conference on 'Emerging issues of the new SARS COV-2 variant omicron and its impact on society, economy and culture' by Alipurduar University on *28 February – 1 March, 2022*. **Paper Presentation**
- 2-day National Workshop on "Chemistry in Everyday Life" by Department of Chemistry, School of Advanced Sciences (SAS), VIT-AP University on *17-18 April, 2021*. **Participation**
- Two Days National Web-Based Conference on "Environmental Determinism, Diverse Pollutions, Sources and Controlling Management through Sciences and Humanities" by Alipurduar University on *22-23 March, 2021*. **Paper Presentation**
- International Seminar on 'International Year of the Periodic Table of Chemical Elements – 2019' by Department of Chemistry, University of North Bengal on *22-23 November, 2019*. **Attended**
- National Seminar on "Frontiers in Chemistry 2017-18" by University Grants Commission and Department of Chemistry, University of North Bengal on *14 September, 2017*. **Attended**
- National Symposium on Recent Advances in Chemistry & Industry (2017) at Department of Chemistry, Indian Institute of Engineering Science and Technology, Shibpur, Howrah and Indian Chemical Society, Kolkata on *2-3 August, 2017*. **Paper Presentation**
- Frontiers in Chemistry-2017 at Department of Chemistry, University of North Bengal, Funded by University Grants Commission and SAP (DRS-III) on *20-21 February, 2017*. **Paper Presentation**
- 20th CRSI National Symposium in Chemistry at Department of Chemistry, Gauhati University on *3-5 February, 2017*. **Poster Presentation**
- 19th CRSI National Symposium in Chemistry (CRSI NSC-19) at Department of Chemistry, University of North Bengal on *14-16 July, 2016*. **Poster Presentation**
- Frontiers in Chemistry-2016 at Department of Chemistry, University of North Bengal, Funded by University Grants Commission and SAP (DRS-III) on *7-8 March, 2016*. **Participation**
- Science Academies' Lecture Workshop on "Recent Developments on the Theoretical and Experimental Aspects of Advanced Materials" at Department of Chemistry, University of North Bengal on *18-19 September, 2015*. **Participation**
- 22nd West Bengal State Science & Technology Congress-2015 by Department of Science and Technology, Govt. of West Bengal and University of North Bengal on *28 February-1 March, 2015*. **Participation**

- Science Academies' Lecture Workshop on "Spectroscopy of Emerging Materials" at Department of Chemistry, University of North Bengal on *26-27 November, 2014*. **Participation**
- RSC – India Road Show at Indian Association for the Cultivation of Science and Royal Society of Chemistry on *5 February, 2013*. **Attended**

Publications

(A) Book:

- (1) "Probing Inclusion Complexes of Cyclodextrins with Amino Acids Formation, Characterization and Applications"
Aditi Roy, **Subhadeep Saha** and Mahendra Nath Roy
Lambert Academic Publishing, Germany, **2016**, ISBN: 978-3-659-93821-4.

(B) Book Chapter:

- (2) "Impact of cyclodextrins on the ultraviolet/sun protection factors (UVPF/SPF) of UVR absorbers", Book: "Cyclodextrins for UV Rays Filtration"
Subhadeep Saha, Tanmoy Dutta, Sudipta K. Kundu, Ekramul Kabir, Abdul Ashik Khan
CRC Press, Taylor & Francis Group, USA & UK, **2025**, ISBN: 9781003492757.
- (1) "Encapsulation of Vitamin C into β -Cyclodextrin for Advanced and Regulatory Release", Book: "Vitamin C"
Subhadeep Saha and Mahendra Nath Roy
InTech Publisher, Croatia, **2017**, ISBN: 978-953-51-3421-3.

(C) Article:

- (37) "Exploring different interactions of biologically potent molecules L-aspartic acid and L-glutamic acid prevailing in aqueous antibiotic compound doxycycline hyclate by experimental and theoretical studies at various temperatures"
Sanjoy Barman, Baishali Saha, Sukdev Majumder, **Subhadeep Saha**, Subhankar Choudhury, Sibasish Deb and Mahendra Nath Roy
Journal of Molecular Liquids, **2024**, 416, 126463.
- (36) "Chemico-pharmaceutical investigations of an inclusion complex formed with valacyclovir and γ -cyclodextrin optimized by molecular docking for innovative applications as topical gel"
Baishali Saha, Nibir Das, Paramita Paul, Sanjoy Barman, Modhusudan Mondal, **Subhadeep Saha**, Subhankar Choudhury, Niloy Roy, Salim Ali and Mahendra Nath Roy
New Journal of Chemistry, **2024**, 48, 18187–18204.
- (35) "Exploration of Solvation Consequences of Nicotinic Acid (Vitamin B3) Prevailing in Two Significant Aqueous Ionic Liquid Solutions by Physicochemical and Computational Studies"
Sanjoy Barman, Baishali Saha, Sukdev Majumder, **Subhadeep Saha**, Vikas Kumar Dakua, Subhankar Choudhury, and Mahendra Nath Roy
Journal of Chemical & Engineering Data, **2024**, 69, 2167–2187.

- (34) "A green approach towards the removal of a water pollutant by encapsulation of HBCDD into cyclodextrins: Combined experimental and theoretical studies"
Biplab Rajbanshi, **Subhadeep Saha**, Beauty Mahato, Debadrita Roy, Raja Ghosh, Narendra Nath Ghosh, Tanusree Ray and Mahendra Nath Roy
Green Analytical Chemistry, **2024**, *8*, 100097.
- (33) "Exploring Brilliant Blue FCF Assembly with Beta Cyclodextrin, Characterizations and Applications in Biological Systems Using Physicochemical and Computational Methods"
Baishali Saha, Sanjoy Barman, Modhusudan Mondal, Subhankar Choudhury, **Subhadeep Saha**, Pranish Bomzan, Salim Ali, Kangkan Mallick, Ankita Dutta, Anoop Kumar, Sanyukta Bhattacharjee and Mahendra Nath Roy
ChemistrySelect, **2024**, *9*, 202302895.
- (32) "Exploration of Solvation Consequences of Ionic Liquids Prevalent in the Aqueous Media of Food Additive Azo Dye Tartrazine by Physicochemical and Computational Studies"
Debadrita Roy, Sukdev Majumder, Kangkan Mallick, Niloy Roy, Baishali Saha, **Subhadeep Saha** and Biswajit Sinha
Journal of Chemical & Engineering Data, **2024**, *69*, 38–58.
- (31) "Exploring Various Molecular Interactions of Two Essential Amino Acids Prevalent in Aqueous Solutions of an Ionic Liquid by Density, Viscosity, Refractive Index, Conductance, Surface Tension, Nuclear Magnetic Resonance, Ultraviolet, and Computational Studies"
Kangkan Mallick, Modhusudan Mondal, Doli Roy, Priyanka Roy, Salim Ali, Debadrita Roy, Baishali Saha, Subhankar Choudhury, Subhajit Debnath, Niloy Roy, **Subhadeep Saha** and Mahendra Nath Roy
Journal of Chemical & Engineering Data, **2023**, *68*, 3045–3061.
- (30) "Probing supramolecular complexation of the drug benserazide hydrochloride with hydroxypropyl- β -cyclodextrin by experimental and computational studies"
Debadrita Roy, Pranish Bomzan, Subarna Thapa, Niloy Roy, Ankita Dutta, Md Salman Haydar, Swarnendu Roy, Anoop Kumar, **Subhadeep Saha** and Biswajit Sinha
Journal of Molecular Structure, **2023**, *1294*, 136329.
- (29) "Comparative study of electron transfer dynamics in Re(I)-polypyridyl Cd-chalcogenide nanocomposites for high-performance dye-sensitized solar cells"
Subhankar Choudhury, Abdul Ashik Khan, **Subhadeep Saha**, Mahendra Nath Roy and Narendra Nath Ghosh
Structural Chemistry, **2024**, *35*, 371–381.
- (28) "Exploring 2:1 inclusion complexes of cyclodextrins and antispasmodics, Alverine citrate for enhancing bioavailability and sustained dischargement"
Biplab Rajbanshi, Koyeli Das, Debadrita Roy, **Subhadeep Saha** and Mahendra Nath Roy
Journal of Molecular Liquids, **2023**, *370*, 121036.
- (27) "Exploring inclusion complex of an anti-cancer drug (6-MP) with β -cyclodextrin and its binding with CT-DNA for innovative applications in anti-bacterial activity and photostability optimized by computational study"

Modhusudan Mondal, Shatarupa Basak, Salim Ali, Debadrita Roy, **Subhadeep Saha**, Biswajit Ghosh, Narendra Nath Ghosh, Khusboo Lepcha, Kanak Roye and Mahendra Nath Roy

RSC Advances, **2022**, 12, 30936.

- (26) "Physicochemical investigation of L-Asparagine in green solvent arrangements with the manifestation of solvation consequences"

Debadrita Roy, Sukdev Majumder, Biplab Rajbanshi, **Subhadeep Saha** and Biswajit Sinha

World Journal of Advanced Research and Reviews, **2022**, 13, 401-428.

- (25) "Cyclic oligosaccharides as controlled release complexes with food additives (TZ) for reducing hazardous effects"

Modhusudan Mondal, Shatarupa Basak, Debadrita Roy, **Subhadeep Saha**, Biswajit Ghosh, Salim Ali, Narendra Nath Ghosh, Ankita Dutta, Anoop Kumar, Mahendra Nath Roy

Journal of Molecular Liquids, **2022**, 348, 118429.

- (24) "Encapsulated hydroxychloroquine and chloroquine into cyclic oligosaccharides are the potential therapeutics for COVID-19: insights from first-principles calculations"

Aditi Roy, Ranjoy Das, Debadrita Roy, **Subhadeep Saha**, Narendra Nath Ghosh, Subires Bhattacharyya and Mahendra Nath Roy

Journal of Molecular Structure, **2022**, 1247, 131371.

- (23) "Synthesis and characterization of an industrially significant ionic liquid and its inclusion complex with β -cyclodextrin and its soluble derivative for their advanced applications"

Raja Ghosh, Niloy Roy, **Subhadeep Saha**, Samir Das, Biraj Kumar Barman, Debadrita Roy, Vikas Kumar Dakua and Mahendra Nath Roy

Chemical Physics Letters, **2021**, 769, 138401.

- (22) "Formation & specification of host-guest inclusion complexes of an anti-malarial drug inside into cyclic oligosaccharides for enhancing bioavailability"

Aditi Roy, **Subhadeep Saha**, Debadrita Roy, Subires Bhattacharyya and Mahendra Nath Roy

Journal of Inclusion Phenomena and Macrocyclic Chemistry, **2020**, 97, 65-76.

- (21) "Host-guest inclusion complexation of 3-(2-naphthyl)-D-alanine with α - and β -cyclodextrins explored by nuclear magnetic resonance, Fourier-transform infrared, high-resolution mass spectrometry, surface tension, and conductometric studies"

Binoy Chandra Saha, **Subhadeep Saha**, Raja Ghosh and Mahendra Nath Roy

Indian Journal of Advances in Chemical Science, **2019**, 7, 39-45.

- (20) "Study to probe subsistence of host-guest inclusion complexes of α and β -cyclodextrins with biologically potent drugs for safety regulatory dischargement"

Biplab Rajbanshi, **Subhadeep Saha**, Koyeli Das, Biraj Kumar Barman, Swarnab Sengupta, Arindam Bhattacharjee and Mahendra Nath Roy

Scientific Reports, **2018**, 8, 13031.

- (19) "Study on host-guest inclusion complexation of a drug in cucurbit[6]uril"
Kanak Roy, **Subhadeep Saha**, Biswajit Datta, Lovely Sarkar and Mahendra Nath Roy
Zeitschrift für Physikalische Chemie, **2018**, 232, 281 – 293.
- (18) "Investigation of Inclusion Complexes of Sodium Valproate inside into α and β -Cyclodextrins"
Binoy Chandra Saha, **Subhadeep Saha**, Koyeli Das, Sankar Basak and Mahendra Nath Roy
Asian Journal of Science and Technology, **2018**, 9, 7555 – 7560.
- (17) "Mechanistic investigation of inclusion complexes of a sulfa-drug with α and β -cyclodextrins"
Subhadeep Saha, Aditi Roy and Mahendra Nath Roy
Industrial & Engineering Chemistry Research, **2017**, 56, 11672 – 11683.
- (16) "Exploration of complexes of 18-crown-6 with three similarly substituted imidazolium, pyridinium and pyrrolidinium ionic liquids"
Subhadeep Saha and Mahendra Nath Roy
Chemical Physics Letters, **2017**, 684, 44 – 52.
- (15) "Probing supramolecular complexation of cetylpyridinium chloride with crown ethers"
Subhadeep Saha and Mahendra Nath Roy
Journal of Molecular Structure, **2017**, 1147, 776 – 785.
- (14) "Evidences for complexations of β -cyclodextrin with some amino acids by ^1H NMR, surface tension, volumetric investigations and XRD"
Mitali Kundu, **Subhadeep Saha** and Mahendra Nath Roy
Journal of Molecular Liquids, **2017**, 240, 570 – 577.
- (13) "Study of complexation of an ionic liquid inside into crown ethers in aqueous environments by physicochemical techniques"
Mahendra Nath Roy, **Subhadeep Saha**, Subhankar Choudhury and Aditi Roy
Physics and Chemistry of Liquids, **2017**, 55, 659 – 668.
- (12) "Exploration of inclusion complexes of probenecid with α and β -cyclodextrins: Enhancing the utility of the drug"
Aditi Roy, **Subhadeep Saha** and Mahendra Nath Roy
Journal of Molecular Structure, **2017**, 1144, 103 – 111.
- (11) "Probing inclusion complex formation of amantadine hydrochloride with 18-crown-6 in methanol by physicochemical approach"
Mahendra Nath Roy, Siti Barman and **Subhadeep Saha**
Zeitschrift für Physikalische Chemie, **2017**, 231, 1111 – 1126.
- (10) "Study to explore the mechanism to form inclusion complexes of β -cyclodextrin with vitamin molecules"
Subhadeep Saha, Aditi Roy, Kanak Roy and Mahendra Nath Roy
Scientific Reports, **2016**, 6, 35764.

- (9) "NMR, surface tension and conductivity studies to determine the inclusion mechanism: thermodynamics of host-guest inclusion complexes of natural amino acids in aqueous cyclodextrins"
Subhadeep Saha, Tanusree Ray, Saptarshi Basak and Mahendra Nath Roy
New Journal of Chemistry, **2016**, 40, 651 – 661.
- (8) "Insertion behavior of imidazolium and pyrrolidinium based ionic liquids into α and β cyclodextrins: Mechanism and factors leading to host-guest inclusion complexes"
 Aditi Roy, **Subhadeep Saha**, Biswajit Datta and Mahendra Nath Roy
RSC Advances, **2016**, 6, 100016 – 100027.
- (7) "Host-guest inclusion complexes of RNA nucleosides inside aqueous cyclodextrins explored by physicochemical and spectroscopic methods"
 Mahendra Nath Roy, **Subhadeep Saha**, Siti Barman and Deepak Ekka
RSC Advances, **2016**, 6, 8881 – 8891.
- (6) "Exploration of inclusion complexes of neurotransmitters with β -cyclodextrin by physicochemical techniques"
 Mahendra Nath Roy, **Subhadeep Saha**, Mitali Kundu, Binoy Chandra Saha and Siti Barman
Chemical Physics Letters, **2016**, 655-656, 43 – 50.
- (5) "Probing inclusion complexes of cyclodextrins with amino acids by physicochemical approach"
 Mahendra Nath Roy, Aditi Roy and **Subhadeep Saha**
Carbohydrate Polymers, **2016**, 151, 458 – 466.
- (4) "Study to explore host-guest inclusion complexes of cyclodextrins with biologically active molecules in aqueous environment"
 Aditi Roy, **Subhadeep Saha** and Mahendra Nath Roy
Fluid Phase Equilibria, **2016**, 425, 252 – 258.
- (3) "NMR, surface tension and conductance study to investigate host-guest inclusion complexes of three sequential ionic liquids with β -cyclodextrin in aqueous media"
 Siti Barman, Deepak Ekka, **Subhadeep Saha** and Mahendra Nath Roy
Chemical Physics Letters, **2016**, 658, 43 – 50.
- (2) "Host-guest inclusion complexes of α and β -cyclodextrins with α -amino acids"
 Mahendra Nath Roy, Deepak Ekka, **Subhadeep Saha** and Milan Chandra Roy
RSC Advances, **2014**, 4, 42383 – 42390.
- (1) "Design and synthesis of an on-off "click" fluorophore that executes a logic operation and detects heavy and transition metal ions in water and living cells"
 Ganesh Chandra Midya, Sushovan Paladhi, Sudipta Bhowmik, **Subhadeep Saha** and Jyotirmayee Dash
Organic & Biomolecular Chemistry, **2013**, 11, 3057 – 3063.