

Curriculum Vitae

Dr. Sourav Das

Ph.D (Chemistry)
Assistant Professor
Department of Chemistry
Royal School of Applied and Pure Sciences
The Assam Royal Global University
Contact No: +91-9774282449/7002201098
Email id: sdas8@rgu.ac/ souravdas1891@gmail.com
GoogleScholar:
https://scholar.google.com/citations?hl=en&user=NAaBLQYAAAAJ&view_op=list_works&authuser=1&sortbv=pubdate



Carreer objective(s)

- ✓ To have an academic career including research, teaching and also management responsibilities.
- ✓ To utilize all the state of the art facilities available in research in order to create low cost, efficient and time-saving solution to the problems existing in the modern world.

Personal details

D.O.B: 18th September, 1991.

Gender: Male

Category: SC

Marital status: Unmarried

Nationality: Indian

Languages: English, Hindi, Assamese and Bengali.

Educational details

Qualification	School/College	Board/University	Year of Passing	% of Marks
PhD	NIT Meghalaya	NIT Meghalaya	2021	-
M.Sc (Chemistry)	NEHU, Shillong.	North-Eastern Hill University (NEHU), Shillong.	2015	78.44
Graduation (B.Sc.Chemistry)	St. Edmund's College, Shillong, Meghalaya.	NEHU	2013	67.50
Higher Secondary	St. Edmund's College, Shillong, Meghalaya.	Meghalaya Board of Secondary Education (MBOSE)	2010	64.50
Matriculation	Jailroad Boys Higher Secondary school.	MBOSE	2008	83

Research experience

- ✓ **Ph.D:** August 2016- March 2021: Ph.D under the supervision of **Dr. Atanu Singha Roy**.
Title of the Thesis: "An investigation into the interactions of dietary polyphenols with the biological targets: Binding properties and the inhibitory potential of the polyphenols towards protein modification"
- ✓ **Post Doctoral Research:** April 2021-2023: Department of Biotechnology- Research associate (DBT-RA) fellow at the Materials Research Center, IISc Bangalore under the supervision of **Dr. Subinoy Rana**

Broad area of research: Physical/Biophysical Chemistry

Research area:

- Protein-Ligand interaction studies using spectroscopic techniques e.g., UV-vis, steady-state fluorescence, FT-IR, Circular dichroism, and molecular docking studies.
- Protein fibrillation and Glycation.
- Emulsion gels
- Cascade reactions in oil/water interface.
- Nanozymes
- Temporal control over enzymatic activities using vesicles/micelles.
- Preparation of emulsion gels for dual drug delivery.
- Liquid-liquid phase separation and coacervates.
- G-Quadruplex stabilization.
- Preparation of biocompatible silver nanoparticles using dietary polyphenols as reducing/capping agents and further studies on their biological applications such as interaction with proteins, anti-bacterial and cytotoxicity studies.

Teaching Experience

- ✓ **Sep 2023- Present:** The Assam Royal Global University
- ✓ **2017-2019:** Physical Chemistry laboratory classes as TA duty
- ✓ **Spring 2020:** Environmental Science (CY102) classes of B.Tech (Semester II) as TA duty

Skills

Key Skills

- Acquainted with spectroscopic techniques such as Fluorescence Spectroscopy, UV-vis spectroscopy, Circular Dichroism, FTIR spectroscopy, XRD, Surface tensiometer
- Acquainted with Rheometer, Confocal fluorescence Microscopy, FESEM, ITC, Plate reader, Lyophilizer, Atomic force Microscopy.
- Theoretical studies using Molecular docking and Gaussian.

- Quick responding.
- Flexible: can work in a group as well as independently.

Technical skills

- MS Office, Origin Data Analysis and Graphing, Adobe Photoshop, Chem Draw, PyMOL, Chimera, NACCESS, Adobe Illustrator

Scholastic Achievements and awards

- Featured in the list of worlds top 2 % most cited student researcher in 2021 database (published by Stanford University)
<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3>
<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3/files/b3e31af2-054c-4b3a-b9c5-6fd9bf10557a>
- SLET-2019
- CSIR UGC NET-LS, AIR-74 (June 2020)
- Ranked 2nd (position) in M.Sc. (Chemistry), NEHU 2015.
- Best poster award at the National Seminar on Recent Developments in Chemistry, July 12 -13, St. Mary's college, Shillong, 2017.
- Best poster award at the National Conference on Recent Advances in Chemistry, October 14 -15, NIT Meghalaya, Shillong, 2019.
- Received the Institute Best Research Award, awarded by the National Institute of Technology Meghalaya at the Research Conclave, 2020.
- Indian Chemical Society Research Excellence Award for oral Presentation in international seminar on "Recent Advances in Chemistry & Material Sciences (2020)" held in the month of August 2020.
- Received Best poster award from American Chemical Society at NCMMS 2022 held at VIT Bhopal University, Feb 28-March 02, 2022.

Conference attended

1. Annual Symposium of the Indian Biophysical Society at IISER Mohali, March 23-25, 2017.
2. National Seminar on Recent Developments in Chemistry, July 12 -13, St. Mary's college, Shillong, 2017.
3. Recent Trends in Chemical Sciences (RTCS) October 12-13, NIT Meghalaya, 2017.
4. National Workshop On Fluorescence And Raman Spectroscopy FCS 2017 December 17-21, IIT Guwahati, 2017.
5. National Seminar on Contemporary Challenges in Chemistry, November 20-21, NEHU, Shillong, 2018.
6. Frontiers in Chemical Sciences (FICS), December 6- 8, 2018, IIT Guwahati, 2018.
7. National Conference on Recent Advances in Chemistry (RAC2019), October 14 -15, NIT Meghalaya, Shillong, 2019.

8. National Symposium on Recent Trends in Chemistry (RTC-19), NEHU, Shillong from 31st Oct till 01st Nov, 2019.
9. International seminar on “Recent Advances in Chemistry & Material Sciences (2020)” held in the month of August 2020 (*online mode*).
10. Online workshop on Powder X-Ray diffraction techniques and its applications, NECBH, IIT Guwahati, Assam held on 20th and 21st January 2021.
11. MBU50 Symposium held from January 23 - 25, 2023

Research Publications/Chapters (h-index: 13, i10-index: 14)

1. **Das, S.**; Solra, M.; Sahoo, J.; Srivastava, A.; S, F.; De, M.; Rana, S. G-Quadruplex Hydrogel-Based Stimuli-Responsive High-Internal-Phase Emulsion Scaffold for Biocatalytic Cascades and Synergistic Antimicrobial Activity . **Chemistry of Materials**. **2023** DOI: 10.1021/acs.chemmater.3c02173. (Just Accepted in **ACS Chemistry of Materials**). (IF 8.6 2022). Accepted as Front Cover of the issue.
2. Pathan J, Quraishi S, **Das S**, Monika, Chalana A , Sutradhar D, Adhikari S. Exploring benzene Ru(II) complexes of 2-substituted quinoline/naphthyridine ligands: Synthesis, biomacromolecular binding and DFT investigations. **Journal of Molecular Structure**. **1295**, 136690, **2024**. 10.1016/j.molstruc.2023.136690. (IF 3.8 2023)
3. A. Kamra, **Das, S**; P. Bhatt, M. Solra, T. Maity, S. Rana, A Transient Vesicular Glue for Amplification and Temporal Regulation of Biocatalytic Reaction Networks. **Chemical Science. Chem. Sci.**, **2023**, 14, 9267-9282. (<https://doi.org/10.1039/D3SC00195D>). (IF 8.4 2022)
4. **Das, S.**; Solra, M.; Rana, S. Emulsion Gel: A Dual Drug Delivery Platform for Osteoarthritis Treatment. *Regenerative Engineering and Translational Medicine*. 9, 279–294 (**2023**) <https://doi.org/10.1007/s40883-022-00282-x>. (IF 2.6, 2022)
5. Solra, M.; **Das, S.**; Srivastava, A.; Sen, B.; Rana, S. Temporally Controlled Multienzyme Catalysis Using a Dissipative Supramolecular Nanozyme. *ACS Appl. Mater. Interfaces* **2022**, 14, 40, 45096–45109. <https://doi.org/10.1021/acsami.2c08888>. (IF 9.5, 2022)
6. **Das, S.**; Sarmah, S.; Hazarika, Z.; Rohman, M. A.; Sarkhel, P.; Jha, A. N.; Roy, A. Singha. Targeting the Heme Protein Hemoglobin by (-)-Epigallocatechin Gallate and the Study of Polyphenol-Protein Association Using Multi-Spectroscopic and computational Methods. *Phys. Chem. Chem. Phys.* **2020**, 22, 2212-2228. <https://doi.org/10.1039/C9CP05301H>. (IF 3.3 2022)
7. **Das, S.**; Sarmah, S.; Singha Roy, A. Monitoring Fluorescence Emission Behaviors of Dietary Polyphenols in a Serum Albumin Environment. *New J. Chem.* **2020**, 44, 299-302. <https://doi.org/10.1039/C9NJ03938D>. (IF 3.3 2022) ISSN: 1369-9261
8. **Das, S.**; Pahari, S.; Sarmah, S.; Rohman, M. A.; Paul, D.; Jana, M.; Singha Roy, A. Lysozyme-Luteolin Binding: Molecular Insights into the Complexation Process and the Inhibitory Effects of Luteolin towards Protein Modification. *Phys. Chem. Chem. Phys.* **2019**, 21, 12649–12666. <https://doi.org/10.1039/c9cp01128e>. ISSN: 1463-9076 (IF 3.3 2022)
9. **Das, S.**; Khanikar, P.; Hazarika, Z.; Rohman, A.; Uzir, A.; Jha, A. N.; Singha Roy, A. Deciphering the Interaction of 5 , 7-Dihydroxyflavone with Hen-Egg-White Lysozyme through Multispectroscopic and Molecular Dynamics Simulation Approaches. *ChemistrySelect* **2018**, 3 (17), 4911–4922. <https://doi.org/10.1002/slct.201800280>. (IF

- 2.1 2022). ISSN: 2365-6549
10. **Das, S.**; Bora, N.; Rohman, M. A.; Sharma, R.; Jha, A. N.; Singha Roy, A. Molecular Recognition of Bio-Active Flavonoids Quercetin and Rutin by Bovine Hemoglobin: An Overview of the Binding Mechanism, Thermodynamics and Structural Aspects through Multi-Spectroscopic and Molecular Dynamics Simulation Studies. *Phys. Chem. Chem. Phys.* **2018**, *20* (33), 21668–21684. <https://doi.org/10.1039/C8CP02760A>.
 11. **Das, S.**; Rohman, M. A.; Singha Roy, A. Exploring the Non-Covalent Binding Behaviours of 7-Hydroxyflavone and 3-Hydroxyflavone with Hen Egg White Lysozyme: Multi-Spectroscopic and Molecular Docking Perspectives. *J. Photochem. Photobiol. B Biol.* **2018**, *180*, 25–38. <https://doi.org/10.1016/j.jphotobiol.2018.01.021>. ISSN: 1873-2682
 12. **Das, S.**; Karn, A.; Sarmah, R.; Rohman, M. A.; Koley, S.; Ghosh, P.; Singha Roy, A. Characterization of Non-Covalent Binding of 6-Hydroxyflavone and 5,7-Dihydroxyflavone with Bovine Hemoglobin: Multi-Spectroscopic and Molecular Docking Analyses. *J. Photochem. Photobiol. B Biol.* **2017**, *178*, 40–52. <https://doi.org/https://doi.org/10.1016/j.jphotobiol.2017.10.021>. (IF 5.4 2022).
 13. **Das, S.**; Santra, S.; Rohman, M. A.; Ray, M.; Jana, M.; Singha Roy, A. An Insight into the Binding of 6-Hydroxyflavone with Hen Egg White Lysozyme: A Combined Approach of Multi-Spectroscopic and Computational Studies. *J. Biomol. Struct. Dyn.* **2018**, *37*, 4019-4034. <https://doi.org/10.1080/07391102.2018.1535451>. (IF 5.235 2023) ISSN: 15380254
 14. **Das, S.**; Ghosh, P.; Koley, S.; Singha Roy, A. Binding of Naringin and Naringenin with Hen Egg White Lysozyme: A Spectroscopic Investigation and Molecular Docking Study. *Spectrochim. Acta Part A Mol. Biomol. Spectrosc.* **2018**, *192*, 211–221. <https://doi.org/10.1016/j.saa.2017.11.015>. (IF 4.4 2023) ISSN 1386-1425
 15. Sarmah, S.; Pahari, S.; **Das, S.**; Belwal, V. K.; Jana*, M.; Singha Roy*, A. Non-Enzymatic Glycation of Human Serum Albumin Modulates Its Binding Efficacy towards Bioactive Flavonoid Chrysin: A Detailed Study Using Multi-Spectroscopic and Computational Methods. *J. Biomol. Struct. Dyn.* **2020**, *39*, 476-492. <https://doi.org/10.1080/07391102.2019.1711196>.
 16. **Das, S.**, Sarmah, Lyndem, S, Singha Roy,* A, An investigation into the identification of potential inhibitors of SARS-CoV-2 main protease using molecular docking study, *J. Biomol. Struct. Dyn.* **2020**, *39*, 3347-3357. <https://doi.org/10.1080/07391102.2020.1763201>
 17. **Das, S.**; Hazarika, Z.; Sarmah, S.; Rohman, M.A.; Paul, D.; Jha, A.N; Singha Roy, A.* , Exploring the interaction of bioactive kaempferol with serum albumin, lysozyme and hemoglobin: A biophysical investigation using multi-spectroscopic, docking and molecular dynamics simulation studies. *J. Photochem. Photobiol. B Biol.* **2020**, **205**, 111825. [10.1016/j.jphotobiol.2020.111825](https://doi.org/10.1016/j.jphotobiol.2020.111825)
 18. Sarmah, S.,**Das, S.**, Singha Roy,* A, Protective actions of bioactive flavonoids chrysin and luteolin on the glyoxal induced formation of advanced glycation end products and aggregation of human serum albumin: in vitro and molecular docking analysis, *Int.I J. of Biological Macromolecules.* *165*, **2020**, 2275-2285. <https://doi.org/10.1016/j.ijbiomac.2020.10.023>
 19. **Das, S.**, Langbang, L., Haque, M., Belwal, V. K., Aguan, K., Singha Roy, A*. Biocompatible silver nanoparticles: An investigation into their protein binding efficacies, anti-bacterial effects and cell cytotoxicity studies. *Journal of Pharmaceutical Analysis*, *11*, **2021**, 422-434. <https://doi.org/10.1016/j.jpha.2020.12.003>

20. **Das, S***, Singh, A., Samanta, S.K. *et al.* Naturally occurring anthraquinones as potential inhibitors of SARS-CoV-2 main protease: an integrated computational study. *Biologia* **77**, **2022**, 1121–1134. 10.1007/s11756-021-01004-4. IF 1.5 (2022)
21. Baruah, K., Haque, M., Langbang, L., **Das, S.**, Aguan, K., Singha Roy, A*, Ocimum sanctum mediated green synthesis of silver nanoparticles: A biophysical study towards lysozyme binding and anti-bacterial activity, *Journal of Molecular Liquids*, **337**, **2021**, 116422. <https://doi.org/10.1016/j.molliq.2021.116422>. (IF 6.0 2023)

Manuscript under submission and revision

22. Solra, M; **Das, S**; Rana, S. Point-of-care detection of hydroxyurea drug in serum using a supramolecular enzyme equivalent. (**Under Revision in Biosensors and Bioelectronics**)
23. S Chaudhury, **Das S**, S Rana. Silver-Based Supramolecular Hydrogel for the Development of Smartphone-Enabled Alkaline Phosphatase Sensor. (Submitted in *Materials Horizon*). ChemRxiv: 10.26434/chemrxiv-2023-w81js.

Patent: Granted

1. Rana, S., Solra, M., Fathima S, **Das, S.** Mixed-Ligand Superhydrophobic Metal-Organic Frameworks, and the Process of Preparation Thereof. Application No.202241064733, Patent No: 439252, Date of filing of Application :11/11/2022, Publication Date : 30/12/2022. Date of Patent granted: 17/07/2023.

Book Chapter(s)

1. Lyndem, S., Sarmah, S., **Das, S.**, Singha Roy, A. Coumarin derivatives: biomedical properties and interactions with carrier proteins. *Studies in Natural Products Chemistry*, **73**, **2022**, 173-220.
2. Singha Roy, A., Sarmah, S, **Das, S.**, Effects of Glycation on Serum albumin, in *A Closer Look at Glycation*, Nova Science publishers, 2021, pp 21-78. ISBN: 978-1-53619-176-9.

Extra-curricular activities

- Participated in various college and school level cricket competitions.

Hobbies: Playing cricket, badminton, Carrom, traveling, kite flying, etc.

References

- **Dr. Atanu Singha Roy**
Assistant Professor
Department of Chemistry
NIT Meghalaya
Shillong-793003
India
Email: asroy86@nitm.ac.in; singharoyatanu@gmail.com
Contact: +91-9402102387

Curriculum Vitae

Webpage: <http://nitmeghalaya.in/nitmeghalaya/department/chemistry-1/faculty-5/dr-atanu-singha-roy-1>

- **Dr. Subinoy Rana**
Assistant Professor
Materials Research Center
IISc Bangalore
Bengaluru-560012
India
Email: subinoy@iisc.ac.in
Contact: +91-9148874158
Webpage: <https://drsubinoyrana.wordpress.com/>
- **Dr. Paresh Nath Chatterjee**
Associate Professor
Department of Chemistry
NIT Meghalaya
Shillong-793003
India
Email: paresh.chatterjee@nitm.ac.in
Contact: +91- 9485177028
Webpage: <http://nitmeghalaya.in/nitmeghalaya/department/chemistry-1/faculty-5>
- **Prof. Sivaprasad Mitra**
Professor
Centre for Advanced Studies, Department of Chemistry
North-Eastern Hill University
Shillong-793022
India
Email: smitranehu@gmail.com/smitra@nehu.ac.in
Contact: +91- 9436161736
Webpage: <https://nehu.ac.in/faculty/display/88/Prof-S-Mitra>
- **Prof. Ashit K. Chandra**
Professor
Centre for Advanced Studies, Department of Chemistry
North-Eastern Hill University
Shillong-793022
India
Email: akchandra@nehu.ac.in
Contact: +91- 9436163024
Webpage: <https://nehu.ac.in/faculty/display/86/Prof-Asit-K-Chandra>