Dr. Goutam Ghosh
Postdoctoral Research Fellow
Group of Professor Gustavo Fernández
Organisch-Chemisches Institut
Westfälische Wilhelms Universität (WWU) Münster, Germany
Email: gghosh.chem@gmail.com / gghosh@uni-muenster.de
Researcher ID: AAG-2638-2021
Scopus Author ID: 57194591503
Contact No: +4915219326015 (Germany) /+919007873603 (India)

Personal

Date of Birth: 02.04.1986; Male
Nationality: Indian

Education

- Postdoctoral research (**April, 2019-till date**): Organisch-Chemisches Institut, Westfälische Wilhelms Universität (WWU) Münster, Germany. (Advisor: **Professor Gustavo Fernández**)
- Visiting student (**September, 2017-October, 2017**): Department of Molecular Engineering, Kyoto University, Japan. (Advisor: **Professor Shu Seki**)
- Postdoctoral research (**February, 2015-March, 2019**): School of Applied and Interdisciplinary Sciences, Indian Association for the Cultivation of Science, Kolkata, India. (Advisor: **Professor Suhrit Ghosh**).
- Ph.D (**2009-2014**): Department of Chemistry & Bio-chemistry, Presidency College (now Presidency University), affiliated to **University of Calcutta**, Kolkata, India. (Advisor: **Professor Dipak Kumar Mandal**).
- M.Sc. (Organic Chemistry) (**2008**): (Marks obtained 71.6%), University of Calcutta, India.
- B. Sc. (Chemistry) (**2006**): (Marks obtained 60.875%), University of Calcutta, India.

Title of PhD Thesis: Folding and Structure of Proteins and Peptides: Studies with Plant Lectins

Research Area

During my research career, I have been involved in three major research projects:

Part A- Proteins and Peptides

- Solid phase peptide synthesis and studies of their self-assembling behavior and biological application
- Extraction of lectin proteins from plant and animal sources and studies of protein folding and unfolding pathway

Part B- Polymer Synthesis

- Synthesis (ROP, RAFT) of custom designed amphiphilic block copolymers and their supramolecular assembly by directional interaction

Part C- Synthesis of organic molecules and their supramolecular Polymerization

- Synthesis of H-bonding functionalized π-chromophores, peptide functionalized metal complexes and their pathway complexity and living supramolecular polymerization in controlled way

Current Research Interest

My current research interest is focused on controlled supramolecular assembly of amphiphilic π-systems and peptides.

Teaching experience

I have one year experience of teaching at Bhairab Ganguly College, Kolkata, West Bengal 700056, India. (**From July, 2008-June, 2009**)

Key Technical Skills

- Solid phase peptide synthesis, small organic molecules synthesis, polymer synthesis, Controlled polymerization technique by using chain transfer agent, Designing/understanding self-assembly of π-conjugated chromophores, Design of Experiments.

- Extensive experiences in handling different analytical instruments/techniques such as High-performance liquid chromatography (HPLC), Affinity chromatography, Automated protein purification by liquid chromatography, Gel permeation chromatography (GPC), Lyophilizer, Gel electrophoresis, Atomic force microscopy (AFM), Transmission electron microscopy (TEM), Rheology, X-ray Diffraction, Fluorescence microscopy, Spectroscopy-Fluorescence, UV/Visible, CD, FT-IR, NMR.

Achievements and Awards

- Received WWU Internationalization Fund for Postdoc (May 2022 to July 2022)
- Received WWU Internationalization Fund for Postdoc (April 2021 to December 2021)
- Received Young Scientist Award at the 9th International Scientist Awards on Engineering, Science and Medicine, 2020, Trichy, India, Organized by VDGOOD Professional Association.
- Received best poster presentation award at the "SCBFM-2018", on Supramolecular Chemistry in Biology & Functional Materials, IISER Kolkata, India, 2018.
- Received ACS best poster presentation award at the "MACRO 2017", International conference on polymer science and technology, SPSI Thiruvananthapuram Chapter, Thiruvananthapuram, India, 2017
- CSIR Research Fellowship, India (2009-2014)
- Graduate Aptitude Test in Engineering (GATE), 2009

Membership

- Review Board Member of ACTA SCIENTIFIC PHARMACEUTICAL SCIENCES

Peer Reviews (as reviewer)

- Nature Communications
- Chemistry – A European Journal
- ChemistrySelect
- Materials Chemistry Frontiers
- E-Polymers

Publications (Published – 21; Under preparation – 1)

As correspondig author

5. **G. Ghosh**,* R. Barman, A. Mukherjee, U. Ghosh, S. Ghosh, G. Fernández, "Control over multiple Nano- and Secondary Structures in Peptide Self-Assembly" *Angew. Chem. Int. Ed.* **2022**, 61, e202113403.
4. **G. Ghosh,*** "Control Over Peptide Based Nanostructures for Biomedical Applications" *Acta Scientific Pharmaceutical Sciences* **2021**, 5, 01. (**Editorial Article**)

3. **G. Ghosh,*** K. K. Kartha, G. Fernández, "Tuning the Mechanistic Pathways of Peptide Self-assembly by Aromatic Interactions" *Chem. Commun.* **2021**, 57, 1603-1606. [**Hot Article**]
2. **G. Ghosh,*** G. Fernández "pH- and concentration-dependent supramolecular self-assembly of a naturally occurring octapeptide" *Beilstein J. Org. Chem.* **2020**, 16, 2017–2025.
1. **G. Ghosh,*** R. Barman, J. Sarkar, S. Ghosh "pH-Responsive Biocompatible Supramolecular Peptide Hydrogel" *J. Phys. Chem. B* **2019,** 123, 5909−5915.

Postdoctoral publication

17. **G. Ghosh**, M. Nyenhuis, T. Krüger, J. P. Coelho, N. Doltsinis, G. Fernández, "Pathway complexity of peptide functionalized di-substituted Pd-complex: Impact of liquid-liquid phase separation" (**Under preparation**).
16. **G. Ghosh,** A. Chakraborty, P. Pal, B. Jana, S. Ghosh, "Direct Participation of Solvent Molecules in the Formation of Supramolecular Polymers" *Chem. Eur. J.* **2022,** e202201082. https://doi.org/10.1002/chem.202201082
15. Y. Dorca, C. Naranjo, **G. Ghosh**, B. Soberats, J. Calbo, E. Ortí, G. Fernández, L. Sánchez, "Supramolecular polymerization of electronically complementary linear motifs: Anti-cooperativity by attenuated growth" *Chem. Sci.* **2022,** 13, 81-89.
14. B. Matarranz, **G. Ghosh**, R. Kandanelli, A. Sampedro, K. K. Kartha, G. Fernández, "Understanding the role of conjugation length on the self-assembly behaviour of oligophenyleneethynylenes" *Chem. Commun.* **2021**, 57, 4890-4893.
13. C. Naranjo, Y. Dorca, **G. Ghosh**, R. Gómez, G. Fernández, L. Sánchez, "Chain-capper effect to bias the amplification of asymmetry in supramolecular polymers" *Chem. Commun.* **2021**, 57, 4500 - 4503.
12. I. Helmers, **G. Ghosh**, R. Q. Albuquerque, G. Fernández, "Pathway and Length Control of Supramolecular Polymers in Aqueous Media via a Hydrogen Bonding Lock" *Angew. Chem. Int. Ed.* **2021,** 60, 4368-4376.
11. **G. Ghosh**, P. Dey, S. Ghosh "Controlled Supramolecular Polymerization of π-Systems" *Chem. Commun.* **2020**, 56, 6757-6769.
10. **G. Ghosh**, T. Ghosh, G. Fernández "Controlled supramolecular polymerization of d^8 metal complexes through pathway complexity and seeded growth" *ChemPlusChem* **2020**, 85, 1022–1033.
9. Y. Dorca, C. Naranjo, **G. Ghosh**, R. Gómez, G. Fernández, L. Sánchez "Unconventional chiral amplification in luminescent supramolecular polymers based on trisbiphenylamine-tricarboxamides" *Organic Materials* **2020,** 2, 41-46.
8. E. E. Greciano, S. Alsina, **G. Ghosh,** G. Fernández, Luis Sánchez "Alkyl bridge length to bias the kinetics and stability of consecutive supramolecular polymerizations" *Small Methods* **2020**, 4, 1900715.
7. A. Chakraborty,‡ **G. Ghosh,**‡ D. S. Pal, S. Varghese, S. Ghosh "Organobase Triggered Controlled Supramolecular Ring Opening Polymerization and 2D-Assembly" *Chem. Sci.* **2019,** 10, 7345-7351. (‡**Equal contribution**) [**Hot Article**]
6. W. Matsuda, T. Sakurai, **G. Ghosh**, S. Ghosh, S. Seki "Transient Optical–Microwave Spectroscopy for Electron Mobility Assessment in Solids and Gels: A Comprehensive Approach" *J. Photopolym. Sci. Tech.* **2018,** 31, 91–99.
5. **G. Ghosh**, S. Ghosh "Solvent Dependent Pathway Complexity and Seeded Supramolecular Polymerization" *Chem. Commun.* **2018,** 54, 5720-5723.
4. **G. Ghosh**, M. Paul, T. Sakurai, W. Matsuda, S. Seki, S. Ghosh "Supramolecular chirality issues in unorthodox naphthalene diimide gelators" *Chem. Eur. J.* **2018,** 24, 1938-1946.
3. H. Kar[ǂ], **G. Ghosh[ǂ]**, S. Ghosh "Solvent Geometry Regulated Cooperative Supramolecular Polymerization" *Chem. Eur. J.* **2017**, 23, 10536 – 10542 (**[ǂ]Equal contribution**).

PhD publication

2. **G. Ghosh**, D. K. Mandal "Novel unfolding sequence of banana lectin: folded, unfolded and natively unfolded-like monomeric states in guanidine hydrochloride" *Biochimie* **2014**, 99, 138-145.
1. **G. Ghosh,** D. K. Mandal "Differing structural characteristics of molten globule intermediate of peanut lectin in urea and guanidine-HCl" *International Journal of Biological Macromolecules* **2012**, 51, 188– 195.

Conferences

3. **G. Ghosh**, H. Kar, S. Ghosh, Solvent Geometry Dependent Pathway Complexity and Controllable Supramolecular Polymerization, 19-22 December, 2018, SPSI MACRO-2018 Conference in IISER-Pune and CSIR-NCL Pune in Maharashtra, India, 2018.
2. **G. Ghosh**, H. Kar, S. Ghosh, Solvent Geometry Regulated Pathway Selection and Seeded Supramolecular Polymerization, 29-30 March, 2018, "SCBFM-2018", on Supramolecular Chemistry in Biology & Functional Materials, IISER Kolkata, India, 2018.
1. **G. Ghosh**, S. Ghosh, Chirality Issues in Supramolecular Polymerization using 1,3-Dihydroxyl Synthon, 8-11 January, 2017, "MACRO 2017", International conference on polymer science and technology, SPSI Thiruvananthapuram Chapter, Thiruvananthapuram, India, 2017.

Referees

1. Professor Suhrit Ghosh (Postdoc Advisor)
   Chairman, School of Applied and Interdisciplinary Sciences
   Indian Association for the Cultivation of Science; Kolkata-700032; India
   Email: psusg2@iacs.res.in
   Mob: +919903456859
   Telephone: +91 33 473 4971 (Ext 1563)

2. Professor Gustavo Fernández (Postdoc Advisor)
   Department of Organic Chemistry
   University of Münster, Münster, Germany.
   Email: fernandg@uni-muenster.de
   Mob: +4917652523382
   Telephone: +49 251 83-36574

3. Professor Dipak Kumar Mandal (PhD Advisor)
   Department of Chemistry
   Presidency University (Erstwhile Presidency College)
   Kolkata-700073; India
   Email: dm_pcchem@yahoo.co.in
   Mob: +919831258081