

Dr. Pousali Samanta
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Education:

- July 2014 – February 2021 (Submission); October 2021 (Defense)
Ph. D. in Chemistry, Department of Chemistry, Indian Institute of Technology Kharagpur, India
Area of Research: Polymer Chemistry.
Title of the Thesis: Smart Copolymeric Nanoparticles: Synthesis by RAFT Polymerization, Potential Applications in Drug Delivery and Real-time Monitoring.
Supervisor: Prof. Dibakar Dhara
- 2011 – 2013:
M. Sc. in Chemistry: Vidyasagar University, India (83.00%)
- 2008-2011:
B. Sc. (Honors) in Chemistry: Raja N.L. Khan Women's College, Vidyasagar University. (63.4%, 1st Class).
- 2008:
Higher Secondary: West Bengal Council of Higher Secondary Education (84.25%)
- 2006:
Madhyamik: West Bengal Board of Secondary Education (85.87%)

Achievements:

- Qualified for the National Eligibility Test (**NET**) conducted by Council of Scientific and Industrial Research, India (2014, All India Rank- 69, UGC).
- Qualified for the Graduate Aptitude Test in Engineering (**GATE**) (2014, All India Rank- 47).

Teaching Experience:

Teaching experience [*August 2014-December 2016*]

- Physical Laboratory Classes (B. Tech)
- Biochemistry Laboratory Classes (M. Sc.) and
- Physical Chemistry Tutorials Classes (B. Tech)
- Mentored two M.Sc. students, one undergraduate student.

Research Skills:

- **Synthetic Polymer / Organic Chemistry**
 - Standard synthesis and functionalization techniques to produce and modify different monomers; their purification and identification techniques including TLC, PLC and Column/Flash Column Chromatography.

- Polymerization of different types of monomers using RAFT techniques in both aqueous and organic medium.
- Functionalization of polymers, Synthesis of different types of copolymers such as random, block, graft, star-branched polymer.
- **Synthesis and Functionalization of Drug delivery systems / Nanomaterials**
 - Preparation of multi-functional smart cancer drug delivery system (Doxorubicin) – either conjugated or encapsulated.
 - Conjugation of different fluorophores to the drug delivery system for real time monitoring purpose.
 - Preparation of Gold, Palladium nanoparticles and their conjugation with polymers.
- **Study the Different Applications of Polymeric Nanoparticles**
 - Study the solution properties and self-assembly behaviour of amphiphilic polymers in aqueous medium.
 - Study the drug loading and release phenomena from smart polymeric nanoparticles.
 - Study the catalysis of different reactions by polymer stabilized metal nanoparticles.
- **Characterization / Physicochemical Techniques**
 - **Hand on Experience:** NMR, UV-Vis, Fluorescence spectrophotometers; HPLC and GPC instrument; Dynamic light scattering (DLS) instrument.
 - **Working Knowledge:** Transmission electron microscopy (TEM), Differential scanning calorimetry (DSC), Thermo-gravimetric analysis (TGA), Atomic Force Microscopy (AFM), Mass, FT-IR and MALDI-TOF Spectroscopy.

Conferences Attended:

1. Advances in Polymer Science and Rubber Technology, September 24-27, 2019, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India.

Title: pH-Labile and Photochemically Cross-Linkable Polymer Vesicles for Cancer Therapy

2. Symposium on Polymer science, IISER Kolkata, West Bengal, India, July 05-06, 2019.

Title: Arm First Approach Towards the Synthesis of Core Cross-Linked Star Polymer with Hydrophobic Corona via Click Chemistry

3. 19th Tetrahedron Symposium, June 26-29, 2018, Riva del Garda, Lake Garda, Italy.

Title: Arm First Approach Towards the Synthesis of Core Cross-Linked Star Polymer with Hydrophobic Corona via Click Chemistry

4. "Emerging Chemistry and Biology of Carbohydrates" (ECBC-2017) December 18-20, 2017, Indian Institute of Technology Kharagpur, Department of Chemistry, Kharagpur, West Bengal, India.

Title: Temperature, pH and Redox Responsive Cellulose Based Hydrogels for Protein Delivery

5. International Conference on Polymer Science and Technology (MACRO 2017), Kerala, India, January 9-11, 2017

Title: Arm First Approach Towards the Synthesis of Core Cross-Linked Star Polymer with Hydrophobic Corona via Click Chemistry

6. International Conference on Polymer Science and Technology (MACRO 2015), Indian Association for the Cultivation of Science (IACS), Kolkata, India.

Title: Stimuli-Induced Formation and Disintegration/Transition of Amphiphilic Diblock Copolymer Vesicles: Investigation by Energy Transfer between Donor-Acceptor Molecules Encapsulated into the Vesicle.

List of Publications:

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- (1) Samanta, P.; Kapat, K.; Maiti, S.; Biswas, G.; Dhara, S.; Dhara, D. pH-Labile and Photochemically Cross-Linkable Polymer Vesicles from Coumarin Based Random Copolymer for Cancer Therapy. *J. Colloid Interface Sci.* **2019**, 555, 132–144. <https://doi.org/10.1016/j.jcis.2019.07.069>.
 - (2) Maiti, S.; Samanta, P.; Biswas, G.; Dhara, D. Arm-First Approach toward Cross-Linked Polymers with Hydrophobic Domains via Hypervalent Iodine-Mediated Click Chemistry. *ACS Omega* **2018**, 3 (1). <https://doi.org/10.1021/acsomega.7b01632>.
 - (3) Biswas, G.; Jena, B. C.; Maiti, S.; Samanta, P.; Mandal, M.; Dhara, D. Photoresponsive Block Copolymer Prodrug Nanoparticles as Delivery Vehicle for Single and Dual Anticancer Drugs. *ACS Omega* **2017**, 2 (10). <https://doi.org/10.1021/acsomega.7b00911>.
 - (4) Biswas, G.; Jena, B. C.; Sahoo, S.; Samanta, P.; Mandal, M.; Dhara, D. A Copper-Free Click Reaction for the Synthesis of Redox-Responsive Water-Soluble Core Cross-Linked Nanoparticles for Drug Delivery in Cancer Therapy. *Green Chem.* **2019**, 21 (20), 5624–5638. <https://doi.org/10.1039/c9gc01863h>.
 - (5) Dutta, S.; Samanta, P.; Dhara, D. Temperature, pH and Redox Responsive Cellulose Based Hydrogels for Protein Delivery. *Int. J. Biol. Macromol.* **2016**, 87.
 - (6) Biswas, G.; Jena, B. C.; Samanta, P.; Mandal, M.; Dhara, D. Synthesis, self assembly and drug release study of a new dual-responsive biocompatible block copolymer containing phenylalanine derivative. *Journal of Macromolecular Science, partA: Pure and Applied Chemistry*. <https://doi.org/10.1080/10601325.2021.1947748>

Personal Details:

Date of Birth: 19.01.1991

Sex: Female

Nationality: Indian

Languages known: English, Hindi, Bengali

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