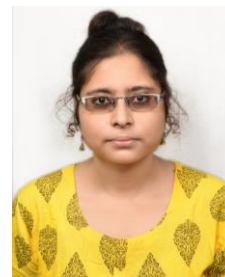


**Ishita Mukherjee, Ph.D.**

**Gold Medalist**

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**Career Objective:**

*To contribute through dedication, hard work and sincerity towards the overall growth of the organization wherein I get the opportunity of explore my academic, technical and scientific knowledge and prove my credentials as a reputed professional. Always enthusiastic to learn more...*

**Education and Qualifications:**

**International Certified Career Coach Advanced Course April, 2022-Present**

Mindler & Career Development Alliance (CDA), USA

**Postdoctoral Fellow October, 2019–Present (advisor: Professor Bimalendu Ray)**

The University of Burdwan, Burdwan, West Bengal, India.

**Ph.D. November, 2014–June, 2019 (advisor: Professor Priyadarsi De)**

Indian Institute of Science Education and Research (IISER) Kolkata, West Bengal, India.

**M.Sc. 2012–2014 (Gold Medalist in Organic Chemistry)**

Department of Chemistry, The University of Burdwan, Burdwan, West Bengal, India.

**B.Sc. 2009–2012 (University Rank Holder)**

Chandernagore College, Chandernagore, The University of Burdwan, West Bengal, India.

**Awards and Recognition:**

- **University Gold Medal** having been placed First in the First Class in the M.Sc. Examination, 2014 in Chemistry
- **Gourikanta Mukherjee Memorial Gold Medal** for highest percentage of marks in M.Sc. Examination, 2014 in Chemistry
- **Dr. Sumanta Basu Memorial Bronze Medal** for the highest marks in M.Sc. Examination, 2014 in Chemistry with Organic Chemistry as Special Paper
- **CAS REGISTRY INNOVATOR** for innovation of novel substances as identified by Chemical Abstract Service (CAS) (a division of the American Chemical Society) in my research works ([DOI 10.1039/c9tb00328b](https://doi.org/10.1039/c9tb00328b) and [DOI 10.1021/acs.bioconjchem.8b00846](https://doi.org/10.1021/acs.bioconjchem.8b00846)) in August, 2020
- **Certificate of Excellence in Certified Peer Review Course** by Research Academy, Elsevier, UK in January, 2022
- **SERB Qualified Unique Identification Documents (SQUID)** by Science and Engineering Research Board (SERB), India; *SQUID-1991-IM-5652* in 2021
- **RSquareL Young Achiever Award 2021** by Research Recognition & Listing (RSquareL), GARNet (Global Academicians & Researchers Network) (Unique identification number **RIAID082**)
- **InSc Research Excellence Award** in 2020 by Institute of Scholars (InSc), Govt. of India
- **InSc Professional Reviewer Certificate** in 2020
- **Best Poster Award** in Scientific Conference to Celebrate 70<sup>th</sup> Anniversary of India-Russia Diplomatic Relations, October, 2017, IISER Kolkata
- 2021: Qualified **Graduate Aptitude Test in Engineering (GATE) in Chemistry (Score- 359)**
- 2014: Qualified **National Eligibility Test (NET) in Chemical Science**, All India Rank: **CSIR 75**
- 2012: Qualified **Joint Admission Test for M. Sc. Indian Institutes of Technology (JAM 2012)** (**All India rank 376**, Marks – 108 out of 300)

- 2003-2005: Successfully completed **The Computer Literacy Program, Government of West Bengal** and obtained **Grade A** (with **93 % Marks in 2003-2004 & 87 % Marks in 2004-2005**). Certificates obtained from **IBM Global Services**

#### Membership:

- **Affiliate Member of Royal Society of Chemistry (RSC)** since March 2021
- **Member of the American Chemical Society (ACS)** (Member Number 31643760); since August, 2020-present (Division- Biological Chemistry, Cellulose & Renewable Materials, Polymer Chemistry)
- **InSc Professional Lifetime Membership** in 2020
- **RSquareL Fellow Member** from 2022 <https://rsquarel.org/membersingle.php?memid=RSL011>
- **Peer Reviewer of Star Protocol journal, Cell Press & iScience, Elsevier** from January 2022

#### Experience and Research Skills:

**November 2019- Present: Designing and Assisting in some interesting project works, The University of Burdwan, West Bengal, India ([www.buruniv.ac.in](http://www.buruniv.ac.in))**

- (1) Synthesis, characterization and biological applications of some injectable in situ forming polysaccharide-based gel.
- (2) Currently working on an independent project about '**Protein Immobilization in Biocompatible Gel Matrix**' in collaboration with DTU (Technical University of Denmark).
- (3) Writing a review article on "**Amino Acid Derived Macromolecules: Stimuli-Responsiveness and Bioapplications**"

**November 2014- June 2019: Ph. D. Thesis Work, IISER Kolkata, West Bengal, India**

- (1) Synthesis of polymers from renewable resources and amino acid-based monomers *via* controlled radical polymerization techniques.
- (2) Detailed characterization and post polymerization modification of polymers.
- (3) Multistep organic synthesis, Manipulation under inert atmosphere.
- (4) Antibacterial activity study (zone of inhibition, growth curve, Gram staining, FESEM analysis).
- (5) Hemolytic activity of our synthesized polymers.
- (6) Synthesis of polymer protein conjugates.
- (7) Activity and half life measurement of polymer protein conjugate.

#### Thesis Brief

Title: Amino Acid Derived Macromolecular Architectures with Potential Antibacterial Applications

The recent development of numerous drug resistant pathogenic bacteria is caused by excessive use of conventional antibiotics for treatment purposes. Herein, we have discussed the generation of new antibacterial polymeric materials via controlled polymerization (reversible addition-fragmentation chain transfer (RAFT)) technique and their comparative effect on different bacterial strains. Regulation of variable amino acid side chain, amphiphilicity, polymeric architecture, different matrices, coupled bioactive or biopassive properties on bactericidal effect with proper mechanistic elucidation and finally their potential bioapplications are studied in detail.

Significant Results : (I) Considerable switching of bacterial cell morphology from rod shape to spherical shape was clearly observed through FESEM analysis during polymer treatment of *E. coli* cells, (II) cell wall disruption on treatment of cationic polymers, (III) greater antibacterial effect of hyperbranched and star architecture than linear one, (IV) hyperbranched PAC was transformed to polymeric gel exhibiting greater antibacterial efficacy in solid matrix than that of liquid one with complete bactericidal effect and rod to spherical switching of bacterial cell (novel pathogenic *V. chemaguriensis*) followed by chain formation via dual contact active and release mechanism through sustain removal of thiol terminated ciprofloxacin fragment along with equilibrium swelling and deswelling process. (V) The ciprofloxacin based cationic zwitterionic polymer displayed excellent bactericidal efficacy against non-biofilm forming *E. coli* and *B. subtilis* in both liquid and solid matrices and less pronounced antibacterial effect on biofilm forming *V. chemaguriensis* specifically in liquid matrix was observed.

**M. Sc. Project (term paper), The University of Burdwan, Advisor: Prof. Amalendu Sinhababu**

(1) Chemical Constituents and Medicinal Properties on the Species of *Curcuma longa* L. (Turmeric).

**Technical Skills and Instrumentation Familiarity:**

✓ Spectroscopic tools: NMR, UV-Vis, FT-IR, Fluorescence, Circular Dichroism (CD), MALDI-TOF MS, ESI-MS	✓ Dynamic Light Scattering (DLS)
✓ Thermal: Differential Scanning Calorimetry (DSC), Thermogravimetric Analysis (TGA)	✓ Rheology
✓ Gel Permeation Chromatography (GPC)	✓ Microscopy: AFM, SEM, TEM, Optical microscopy, Epifluorescence Microscopy,
✓ Column chromatography	✓ Dialysis, Lyophilization
	✓ Antimicrobial activity study, Bacterial Cell imaging, Hemolytic assay, SDS-PAGE

**List of Publications (Book Chapters):**

(1) **Mukherjee, I.** Goswami, K. G. De, P.\* “Alternating Copolymers Based on Amino Acids and Peptides” *Advances in Sustainable Polymers*, Springer, 2020, chapter 5, 95-119

**List of Publications (Journals and preprints):**

Sl No	Title	Author	Journal name	Volume, Page, Year	DOI	Citation
1	Unexpected Fluorescent Behavior of Maleimide Based Zwitterionic Molecule: Aggregation Induced Emission	Mukherjee, I.	ChemRxiv (preprint Accepted) <a href="https://chemrxiv.org/engage/chemrxiv/article-details/6229dcb8daa4fb095186d869">https://chemrxiv.org/engage/chemrxiv/article-details/6229dcb8daa4fb095186d869</a>	March 11, 2022	<a href="https://doi.org/10.26434/chemrxiv-2022-7nns6">10.26434/chemrxiv-2022-7nns6</a>	
2	Recent Development of Polysaccharide-Derived Hydrogel: Properties, Stimuli-Responsiveness and Bioapplications (Review Article)	Mukherjee, I.	ChemRxiv (preprint Accepted) <a href="https://chemrxiv.org/engage/chemrxiv/article-details/6224a94a97f21000eaff340b">https://chemrxiv.org/engage/chemrxiv/article-details/6224a94a97f21000eaff340b</a>	March 8, 2022	<a href="https://doi.org/10.26434/chemrxiv-2022-sn9q4">10.26434/chemrxiv-2022-sn9q4</a>	
3	Matrix Assisted Antibacterial Activity of Polymer Conjugates with Pendant Antibiotics, Bioactive and Biopassive Moieties	Mukherjee, I.; Ghosh, A.; Bhadury, P.; De, P.*	J. Mater. Chem. B	7, 3007-3018, 2019	<a href="https://doi.org/10.1039/C9TB00328B">https://doi.org/10.1039/C9TB00328B</a>	6
4	Matrix Assisted Regulation of Antimicrobial Properties: Mechanistic Elucidation with Ciprofloxacin-Based Polymeric Hydrogel Against <i>Vibrio</i> sp	Mukherjee, I.; Ghosh, A.; Bhadury, P.; De, P.*	ACS Bioconjugate Chem	30, 218-230, 2019	<a href="https://doi.org/10.1021/acs.bioconjchem.8b00846">https://doi.org/10.1021/acs.bioconjchem.8b00846</a>	9
5	Recyclable Thermoresponsive Polymer-β-Glucosidase Conjugate with Intact Hydrolysis Activity	Mukherjee, I.; Sinha, S. K.; Datta, S.*; De, P.*	ACS Biomacromolecules	19, 2286-2293, 2018	<a href="https://doi.org/10.1021/acs.biomac.8b00258">https://doi.org/10.1021/acs.biomac.8b00258</a>	24

6	<i>Leucine Based Polymer Architecture Induced Antimicrobial Properties and Bacterial Cell Morphology Switching</i>	<b>Mukherjee, I.</b> ; Ghosh, A.; Bhadury, P.*; De, P.*	<i>ACS Omega</i>	3, 769-780, 2018	<a href="https://doi.org/10.1021/acsomega.7b01674">https://doi.org/10.1021/acsomega.7b01674</a>	15
7	<i>Side-Chain Amino Acid Based Cationic Antibacterial Polymers: Investigating the Morphological Switching of Polymer Treated Bacterial Cell</i>	<b>Mukherjee, I.</b> ; Ghosh, A.; Bhadury, P.*; De, P.*	<i>ACS Omega</i>	2, 1633-1644, 2017	<a href="https://doi.org/10.1021/acsomega.7b00181">https://doi.org/10.1021/acsomega.7b00181</a>	28
8	<i>Encapsulation Induced Aggregation – A Self-assembly Strategy for Weakly Pi-Stacking Chromophores</i>	Sao, S.; <b>Mukherjee, I.</b> ; De, P.	<i>Chem. Commun.,</i>	53, 3994-3997, 2017	<a href="https://doi.org/10.1039/C7CC00554G">https://doi.org/10.1039/C7CC00554G</a>	11
9	<i>Monitoring Aggregation of a pH-Responsive Polymer via Proton Exchange</i>	Chakraborty, I.; <b>Mukherjee, I.</b> ; Haldar, U. De, P.; Bhattacharyya, R.*	<i>Physical Chemistry Chemical Physics</i>	19, 17360-17365, 2017	<a href="https://doi.org/10.1039/C7CP02013A">https://doi.org/10.1039/C7CP02013A</a>	4
10	<i>POSS Semitelechelic A<math>\beta</math><sub>17-19</sub> Peptide Initiated Helical Polypeptides and Their Structural Diversity in Aqueous Medium</i>	Haldar, U.; Pan, A.; <b>Mukherjee, I.</b> ; De, P.*	<i>Polymer Chemistry</i>	7, 6231-6240, 2016	<a href="https://doi.org/10.1039/C6PY01399F">https://doi.org/10.1039/C6PY01399F</a>	11

**List of Submitted or Working Manuscripts in 2022:**

<i>Sl No.</i>	<i>Title</i>	<i>Author</i>	<i>Manuscript type</i>	<i>Status/Year</i>
1.	<i>Properties, Stimuli Responsiveness and Bioapplications of Polysaccharide-Derived Hydrogel</i>	<b>Mukherjee, I.</b>	Review article	Submitted/2022
2.	<i>Recent development of Polysaccharide Based gel: Porosity Based Classification and A Future Perspective</i>	<b>Mukherjee, I.</b>	Perspective	Submitted/2022
3.	<i>Recent Development of Natural Polymers-Graphene Oxide Based Composites for Wastewater Treatment: Mechanism and Classifications</i>	<b>Mukherjee, I.</b>	Book Chapter (Invited) for CRC Press, Taylor & Francis Group	Submitted/2022

**Additional Certified Courses:**

<b><u>Field of Interest</u></b>	<b><u>Certificate of Completion/ Excellence</u></b>	<b><u>Organizing Body/Year of Completion</u></b>
Research Skills Development	Certified Peer Reviewer Course	Research Academy (Elsevier)/ 2022 & ACS Reviewer Lab/2022
Career Coaching Skill Development	International Certified Career Coach Foundation Course	Mindler & Career Development Alliance (CDA), USA/ 2022
Teaching Skill Development	Teaching with Technology	Linkedin/ 2022
Software Learning	Learning Microsoft Paint 3D	Linkedin/ 2022
	Visual Storytelling in PowerPoint	
Communication and Writing Skills Development	Speaking Confidently and Effectively	Linkedin/2022
	Critical Thinking for More Effective Communication	
	Communicating with Emotional Intelligence	
	Communicating with Confidence	
	Communicating with Empathy	
	Interpersonal Communication	
	Writing a Compelling Blog Post	
	Writing in Plain English	
Life Skills Development (Including Soft Skills & positive psychology)	Improving Your Listening Skills	Linkedin/2022
	Overcome Overthinking	
	Become Your Own Boss	
	Building Self Confidence	
	Happiness Tips	
	15 Secrets Successful People Know about Time Management	
	Training Your Mind to Overcome Pressure and Underperformance	

**Conferences and Poster Presentations:**

1. ACS Science Talk (Virtual Lecture Series)- Laser Spectroscopy Applications to Biology and Medicine: January 28, 2022, American Chemical Society (ACS)
2. ChemSci2021: Leaders In The Field Symposium, Royal Society of Chemistry (RSC), December 13-15, 2021 (Poster Presentation)
3. ACS Spring 2021, April 5-30, 2021 (Poster Presentation), American Chemical Society (ACS)
4. ACS Science Talk (Virtual Lecture Series)- Oxidative damage in proteins: January 22, 2021, American Chemical Society (ACS)
5. RSC Desktop Seminars with Chemical Science, September 1, 2020, Royal Society of Chemistry (RSC)
6. ACS Science Talk (Virtual Lecture Series)-Unravelling Tiny Monstrous Organic Aerosols: Key to Achieve Blue Skies and Human Health: August 28, 2020, American Chemical Society (ACS)
7. Recent Advances in Chemical Sciences-III (Webinar), August 20, 2020, Post Graduate Department, Lady Brabourne College, Kolkata
8. Recent Advances in Chemical Sciences-II (Webinar), July 18, 2020, Post Graduate Department, Lady Brabourne College, Kolkata
9. National Chemistry Scholars' Colloquium 2019 (NCSC-2019), March 7, 2019, IISER-Kolkata.
10. Supramolecular Chemistry in Biology & Functional Materials (SCBFM-2018), March 29-30, 2018, IISER-Kolkata (Poster Presentation).
11. Scientific Conference to celebrate 70<sup>th</sup> anniversary of India-Russia diplomatic relations, October 26, 2017, IISER-Kolkata (Poster Presentation).
12. Smart Materials: Methods and Applications (SMMA-2017), April 20-22, 2017, IISER-Kolkata (Poster Presentation).

13. 10<sup>th</sup> Year Celebration of Excellence in Science at IISER Kolkata “Advances in Life Sciences”, January 13-15, 2017, IISER-Kolkata (Poster Presentation).
14. INTERNATIONAL CONFERENCE ON FUNCTIONAL MATERIALS (ICFM 2016), December 12-14, 2016, Kharagpur (Poster Presentation).
15. International Symposium on Polymer Science and Technology (MACRO 2015), January 23-26, 2015, Cultivation of Science, Kolkata.

**Personal:** Female; Unmarried; *Nationality:* Indian; *Date of Birth:* December 08, 1991

**Language Proficiency:**

- ✓ English
- ✓ Bengali (native language)
- ✓ Hindi

**Other Interests:**

- ✓ Music (Playing Electric Hawaiian Guitar)
- ✓ Painting
- ✓ Photography
- ✓ Stitching, Paper cutting, Origami work
- ✓ Love to create creativity on my own beats
- ✓ Travelling

**References:**

Professor Priyadarsi De (Ph. D. advisor) Department of Chemical Sciences, Indian Institute of Science Education and Research (IISER) Kolkata, Mohanpur - 741246, Nadia, India. E-mail: p_de@iiserkol.ac.in	Professor Punyasloke Bhadury Department of Biological Sciences, Indian Institute of Science Education and Research (IISER) Kolkata, Mohanpur - 741246, Nadia, India. E-mail: pbhadury@iiserkol.ac.in
Professor Bimalendu Ray The University of Burdwan, Chemistry Department, Golapbag Campus, Burdwan 713104, WB, India, E-mail: bray@chem.buruniv.ac.in; www.buruniv.ac.in	

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SciHorizon profile link: <https://www.scihorizon.com/RID-20222713>

Rsquarel profile link: <https://rsquarel.org/listing.php?rid=RSL011>

<https://www.rsquarel.org/viewpaper.php?pid=842&pt=leucine-based-polymer-architecture-induced-antimicrobial-properties-and-bacterial-cell-morphology-switchinga>

Website link: <https://pubhtml5.com/homepage/oybxy>  
<https://www.growkudos.com/profile/dr-ishita-mukherjee>