Curriculum Vitae

Dr. Apurba Pramanik, PhD.

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Education:

Ph.D. in Chemistry (December 2011 - May 2017)
Indian Institute of Science Education and Research Kolkata (IISERK), India.
Specialization: Bio-organic and supramolecular chemistry
Prof. Debasish Haldar research group
Department of Chemical Sciences
Thesis Title: **"Nano Materials from Folded Peptides"**

M. Sc. in Organic Chemistry (2009-2011) with secure 1st division
Department of Chemistry
West Bengal State University, India

B. Sc. in Chemistry, Honours (2006-2009) with secure 1st division
Department of Chemistry
The University of Burdwan, India

Profile Summary and Highlights:

- A self-motivated researcher with multinational research experience, seeking a challenging opportunity in the chemical industry.
- A multidisciplinary research background in synthetic bio-organic, bio-physical, and supramolecular chemistry, as well as drug discovery research.
- Strong expertise in the synthesis and analysis of bio-active peptides, peptidomimetics and cyclic peptides (including both solution-phase and solid-phase synthesis); heterocycle syntheses; synthetic modifications of cyclodextrin-containing host molecules; small molecule fluorophore syntheses and analyses, and a variety of purification techniques including flash column chromatography, GC-MS and HPLC.
- Demonstrated proficiency in biophysical research topics, including in the structure determination and self-assembly analysis of amyloidogenic peptides and proteins, using both AFM-based single molecule force spectroscopy and single-molecule fluorescence spectroscopy.
- Technical know how to handle modern analytical instruments for synthetic organic and bio-organic chemistry and their applications in multidisciplinary research field.
- A very confident science communicator in both written and oral forms, with strong collaborations and leadership skills, which has resulted in 17 publications and two submitted publications.

- ❖ Experience of postgraduate, undergraduate laboratory teaching, and familiarity of working in a group and capability of leadership.

Research and Instrumental Skills

Synthesis of small molecule fluorophores, heterocyclic drugs, modification of cyclodextrin-based supramolecular scaffolds and the applications of these structures for chemical sensing and toxicant removal. Syntheses of solution-phase and solid-phase peptide synthesis; synthesis of cyclic peptides, peptidomimetics, and non-coded amino acids. Analytical and separation techniques including column chromatography, high-performance liquid chromatography (HPLC), LC-MS, ESI-MS, single crystal X-ray diffraction, nuclear magnetic resonance (NMR) spectroscopy, ultraviolet-visible (UV-Vis) spectroscopy, Fourier Transform Infrared (FT-IR) spectroscopy, and circular dichroism (CD) spectroscopy. Studies of organo-gel and hydrogel from peptides and rheological studies of the gels. Characterization of peptide nanostructures by field emission scanning electron microscopy (FE-SEM), DLS, transmission electron microscopy (TEM), atomic force microscopy (AFM-NTMDT) and optical microscopy (polarized and fluorescence). I have experience in the synthesis of small heterocyclic drug scaffold and cyclic peptide-drug conjugate by solid phase peptide synthesis (SPPS). I have also experience on bacteria culture, gel electrophoresis, DNA binding study and drug delivery. I have experience on the field of amyloid protein aggregation study by AFM-based single molecular force spectroscopy (JPK and MFP-3D, Asylum Research, Santa Barbara, CA), liquid and solid-state AFM imaging.

Research Experience:

Postdoctoral Research

Prof. Meital Reches, The Hebrew University of Jerusalem, Israel
(November 2021 - to date)
Conversion of amino acids to heterocyclic compounds with the goal of developing a coupling reagent-free method of peptide synthesis, and their application of these products in biological applications. Accomplished large-scale solution phase antibacterial and antifouling peptide synthesis, and currently investigating the use of these products as pesticides in the agricultural industry.

Prof. Mindy Levine, Ariel University, Israel
(January 2020 - November 2021)
Investigated cyclodextrin compounds as tools for novel chemical sensors and as components of water purification technology. Designed, synthesized, and characterized new fluorophores and cyclodextrin hosts. Resulted in four publications, one submitted publication, one publication in preparation, and 2 conference presentations.

Prof. Gary Gellerman, Ariel University, Israel
(January 2019 - December 2019)
Designed, synthesized, and characterized of new analogues of targeted theranostic peptide drug chimeras in animal/cellular cancer models, and synthesized a group of small heterocyclic drug molecules. Resulted in the development of new approaches towards heterocyclic synthesis for drug discovery research.

Prof. Yuri L. Lyubchenko, University of Nebraska Medical Center, USA
(August 2017 - November 2018)
Investigated protein aggregation and misfolding study by AFM-force spectroscopy. Designed and synthesized tethered polymer conjugated peptides using phosphoramidite and click chemistry methodologies, successfully achieved the surface modification of peptides and, proteins via biomimetic and covalent methods. Resulted one publication and one conference presentation.

Doctoral Research

IISERK, India
December 2011 - May 2017

Bio-organic and supramolecular chemistry along with other ensemble methods were employed to investigate the following goals:

- Synthesis of small bioactive peptide and peptidomimetic molecules by solution-phase methods and purification by column chromatography and preparative HPLC.
- Synthesis of non-coded amino acids and their applications in biology.

Awards

- 2014-2017; CSIR-UGC-NET senior research fellowship, (**All India rank 48**), HRDG, govt. of India.
- 2012-2014; CSIR-UGC-NET junior research fellowship (**All India rank 48**), HRDG, govt. of India.
- 2010- 2011; Merit-Cum-means scholarship, government of West Bengal, India
- 2017-2018; host acceptance from Prof. Claudia Tomasini, University of Bologna, Italy for SERB-OPDF application.
- 2017-2018; host acceptance from Prof. Junko Ohkanda, Shinshu University, Japan for JSPS application.
- 2017-2018; post-doctoral research fellowship from NIH to Y.L.L, USA.
- 2019- 2021; post-doctoral research fellowship from Ariel University, Israel.

Teaching

Teaching Assistant-Organic Synthesis Laboratory, IISERK, Jan 2013-May 2013.
Teaching Assistant -Organic Synthesis Laboratory, IISERK, Jul 2013-Nov 2013.

List of Publications:

1. Highly Sensitive Water Sensors through Fluorescence Quenching of a Coumarin Aldehyde Derivatives. Alen Sam Thomas†, **Apurba Pramanik**†, Sara Amer, Vered Marks and Mindy Levine, 2022, *Manuscript submitted.* **†equal contribution**
2. A Dipodal Bimane-diTriazole-diCu(II) Complex Serves as an Ultrasensitive Water Sensor. Joy Karmakar, **Apurba Pramanik**, Vincent Joseph, Vered Marks, Flavio Grynszpan and Mindy Levine, *Chem. Commun.*, 2022, **58**, 2690-2693. (I. F.- 6.222)

3. Highly Sensitive Water Detection through Reversible Fluorescence Changes in a *syn*-Bimane Based Boronic Acid Derivative. **Apurba Pramanik**, Joy Karmakar, Flavio Grynszpan, and Mindy Levine, *Frontiers in Chemistry (Analytical chemistry),* 2022, 9, 782481. (I. F.- 5.221)

4. Sonication-Induced, Solvent-Selective Gelation of a 1,8-Napthalimide-Conjugated Amides: Structural Insights and Pollutant Removal Applications. **Apurba Pramanik** Basil Raju Karimadom, Haya Kornweitz and Mindy Levine, *ACS Omega,* 2021 *6* (48), 32722-32729. (I. F.- 3.521)

5. Facile Iodine Detection via Fluorescence Quenching of β- Cyclodextrin:Bimane-Ditriazole Inclusion Complexes. **Apurba Pramanik**, Joy Karmakar, Flavio Grynszpan, and Mindy Levine, *Isr. J. Chem.* 2020, **61**, 253-260. (I. F.- 2.78)

6. Highly Sensitive Detection of Cobalt Through Fluorescence Changes in β-Cyclodextrin-Bimane Complexes. **Apurba Pramanik**, Sara Amer, Flavio Grynszpan, and Mindy Levine, *Chem. Commun.*, 2020, **56**, 12126-12129. (I. F.- 6.222)

7. Probing Intermolecular Interactions within the Amyloid β Trimer Using a Tethered Polymer Nanoarray. Sibaprasad Maity†, **Apurba Pramanik†** and Yuri L. Lyubchenko, *Bioconjugate Chem.*, 2018, **29**, 2755-2762, **†equal contribution**. (I. F.- 4.774)

8. Selective Sensing of Ammonium Ion Over Other Biologically Important Ammonia Derivatives by a Coumarin- Based ϵ- Amino Ester. **Apurba Pramanik**, Md. Abbasi, Krishnendu Maji, Sujoy Kumar Nandi, Rupak Datta, Debasish Haldar, *Chemistry Select*, 2018, **3,** 393-398. (I. F.- 2.109)

9. Self-Assembled Peptide Mimetic of a Tubular Host and Supramolecular Polymer. Arpita Paikar, **Apurba Pramanik**, Tanmoy Das and Debasish Haldar, *Polymer Chemistry*, 2017, **8**, 396-403. (I. F.- 5.582)

10. On-line Ammonia Sensor and Invisible Security Ink by Fluorescent Zwitterionic Spirocyclic Meisenheimer Complex. Tanmoy Das, **Apurba Pramanik** and Debasish Haldar, *Sci. Rep.*, 2017, DOI: 10.1038/srep40465. (I. F.- 4.379)

11. Packing-Induced Solid-State Fluorescence and Thermochromic Behavior of Peptidic Luminophores. **Apurba Pramanik** and Debasish Haldar, *RSC Adv.*, 2017, **7**, 389-395. (I. F.-3.361)

12. Photoresponsive Modulation of Hybrid Peptide Assembly, Charge Transfer Complex Formation and Gelation. **Apurba Pramanik**, Arpita Paikar, Krishnendu Maji and Debasish Haldar, *RSC Adv.*, 2016, **6**, 59851-59857. (I. F.- 3.361)

13. Self-Assembled Peptide Microspheres for Sustainable Release of Sulfamethoxazole. **Apurba Pramanik**, Arpita Paikar, Tanmoy Das, Krishnendu Maji and Debasish Haldar, *RSC Adv.*, 2016, **6**, 39172-39179. (I. F.- 3.361)

14. Sonication-Induced Instant Fibrillation and Fluorescent Labeling of Tripeptide Fibers. **Apurba Pramanik**, Arpita Paikar and Debasish Haldar, *RSC Adv.*, 2015, **5**, 53886-53892. (I. F.- 3.361)

15. Influence of Side-Chain Interactions on the Self-Assembly of Discotic Tricarboxyamides: A Crystallographic Insight. Arpita Paikar, **Apurba Pramanik** and Debasish Haldar, *RSC Adv.*, 2015, **5**, 31845-31851. (I. F.- 3.361)
16. Fabrication of Self-Assembled Peptidomimetic Microspheres and Hydrogen Peroxide Responsive Release of Nicotinamide. Suman Kumar Maity, Santu Bera, Arpita Paikar, **Apurba Pramanik** and Debasish Haldar, *Cryst. Eng. Commun.*, 2014, **16**, 2527-2534. (I. F.- 3.545)
17. Halogen Bond Induced Phosphorescence of Capped γ-Amino Acid in the Solid State. Suman Kumar Maity, Santu Bera, Arpita Paikar, **Apurba Pramanik** and Debasish Haldar, *Chem. Commun.*, 2013, **49**, 9051-9053. (I. F.- 6.222)
18. Fabrication of Microspheres from Self-Assembled γ-Peptides. Suman Kumar Maity, Santu Bera, Arpita Paikar, **Apurba Pramanik** and Debasish Haldar, *Cryst. Eng. Commun.*, 2013, **15**, 5860-5866. (I. F.- 3.545)

Published abstracts and poster presentations:

1. Participant in *"Nano Center Annual Conference"* at The Hebrew University of Jerusalem, Israel held on March 1-2nd, 2022.
2. *"Sonication-Induced, Solvent-Selective Gelation of a 1,8-Napthalimide-Conjugated Amides: Structural Insights and Pollutant Removal Applications"* **Apurba Pramanik** Basil Raju Karimadon, Haya Kornweitz and Mindy Levine at ACS Fall 2021, August 22nd - 26th Atlanta, GA, Virtual presentation.
3. *"Sonication-Induced, Solvent-Selective Gelation of a 1,8-Napthalimide-Conjugated Amides: Structural Insights and Pollutant Removal Applications"* **Apurba Pramanik** and Mindy Levine at 8th Indian Peptide Symposium, India held on March 24-26th, 2021 at IISc Bengaluru in Virtual India.
4. *"Design and Synthesis of Higher Order Cyclodextrin Architectures for Targeted System Performance"* **Apurba Pramanik** and Mindy Levine, 85th ICS meeting, Jerusalem, Israel held on February 18-19th, 2020.
5. *"Single Molecule Probing of Amyloid β Trimer Using Polymer Nanoarry Approach"* **Apurba Pramanik**, Sibaprasad Maity and Yuri L. Lyubchenko, 5th Midwest Single Molecule Workshop at *Iowa State University, USA* held on July 30-31st, 2018.
6. "*Participant in Chemistry Interfacing with Biology and Physics*" at IISER-Kolkata, *India* held on January 27-28th, 2017.
7. "*Sonication-Induced Fibers with Hot Spot for Capture and Slow-Release of Drug*" **Apurba Pramanik** and Debasish Haldar, at 7th Peptide Engineering Meeting, India held on December 5-7th, 2015 at IISER-Pune.
8. "*Sonication-Induced Fibers withHot Spot for Capture and Slow-Release of Drug*" - **Apurba Pramanik** and Debasish Haldar at 5th Indian Peptide Symposium, India held on September 24-25th, 2015 at JNCASR Bengaluru.

9. "*Participate in the India-Bangladesh Structural Chemistry Conference*" IISERK, India held on September 18-19th 2015.
10. "*Supramolecular Peptide Mimetic of TMV Capsid: Modular* Encapsulation" Arpita Paikar, **Apurba Pramanik** at Department Day, Department of Chemistry, IISER Kolkata, India held on January 28th, 2015.
11. "*Solvent Assisted Structural Diversity: Supramolecular Sheet and Double Helix of a Short Aromatic γ-Peptide*" - Rajib Sarkar, Santu Bera, **Apurba Pramanik**, Arpita Paikar, at the department Day, department of Chemistry, IISER-Kolkata, India held on December 7th, 2014.
12. "*Ultrasound-Responsive Instant Fibril Formation and Fluorescent Labelling of Tripeptide* Fibers" - **Apurba Pramanik**, Arpita Paikar and Debasish Haldar at *Calcutta university, India* held on September 18-19th , 2014.
13. "*Grow with Water: Supramolecular Stabilization of Nanoporous Materials by Helical and Zigzag Water Chains*" Santu Bera, **Apurba Pramanik**, Arpita Paikar and Debasish Haldar at the Department Day, Department of Chemistry, IISER-Kolkata, India held on February 4th, 2013.

Media Coverage

- The Bengali newspapers "**Ganashakti**" and "**Bartaman**", India, has covered our works on Ammonia Sensor and Invisible Security Ink by Fluorescent Zwitterionic Complex on 14.03.2017.

References

1. **Prof. Debasish Haldar (*Ph.D. supervisor*)**
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