

DR. PRASENJIT MAHATO

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ACADEMICIAN / RESEARCH PROFESSIONAL - CHEMISTRY

PROFILE

- Competent & diligent professional **with comprehensive scientific and technical knowledge in the field of Chemistry for undertaking teaching (UG/PG level) and research assignments**; last spearheaded as **Post-Doctoral Fellow with Kyushu University Fukuoka, Japan**.
- Superior **diagnostics skills, expertise in identifying issues, forming hypothesis, designing and conducting analysis, synthesizing conclusions into recommendations** and implementing change. Exceptional ability to summarize research findings, analyze/evaluate data & results and perceive patterns/ structures.
- **Extensive experience in multi-step inorganic / organic synthesis of different target molecules** – strong ability to conceptualize the processing for the research with careful & sophisticated quality control measures in compliance to the specified standards for synthesis of metal organic frameworks, metallo gels and organic nanoparticles.
- Recognized for a strong and excellent academic background and knowledge of the domain area of study – **expertise in planning, organizing and teaching Chemistry to UG / PG students** as per the course curriculum. Ability to individualize instructions based on students specialized and changing needs with proven ability to develop rapport with students.
- **Expertise in writing scientific papers, patents and books** – holds merit of publications in national & international journals; also attended 3 national and 6 international conferences.
- **Outstanding communication skills, keen planner and farsighted** with strengths to perceive beyond obvious. Result driven and focused with immaculate work habits, time management and leadership skills.

Core Competencies

Research Management ♦ Research Data Compilation ♦ Quality Management ♦ Project Coordination ♦ Research Dissertation ♦ Curriculum Design & Development ♦ Student Evaluation & Assessment ♦ Classroom Management/ Discipline ♦ Student Development ♦ Lesson Planning ♦ Training & Development ♦ Team Management

Instruments Handled

Single crystal and Powder X-ray diffractometer, FT-NMR, FT-IR, UV-visible spectroscopy, Steady-state fluorescence, time resolved fluorescence, TGA, optical and fluorescence microscopy, MALDI-TOF mass spectrometer, SEM, AFM, TEM, Dynamic and static light scattering, Langmuir-Blodgett technique, Brewster angle microscopy, Spectrometer for measuring upconversion luminescence and absolute quantum yield measuring instrument

Fellowships / Awards

- *Acquired Junior Research Fellowship – awarded by Council of Scientific and Industrial Research, (CSIR India), 2007.*
- *Received Senior Research Fellowship – awarded by Council of Scientific and Industrial Research, (CSIR India), 2009.*
- *Achieved JSPS Postdoctoral Fellowship – awarded by Japan society for the promotion of science (JSPS - Japan), 2012.*
- *Commended & appreciated with Best Poster award by Prof. Susumu Kitagawa in MOF-2014 (International conference on MOFs in Kobe, Japan, 2014).*

PROFESSIONAL EXPERIENCE

RAGHUNATHPUR

June'17 -Till date

SIDHO KANHO BIRSA UNIVERSITY, WEST BENGAL

Assistant Professor in the Department of Chemistry

COLLEGE

KYUSHU
Nov'12 - Jul'16
Post-Doctoral Fellow

UNIVERSITY

FUKUOKA,

JAPAN

- Participating in planning and designing of research for multi-step organic synthesis of different target molecules.
- Played a key role in synthesis of metal organic frameworks, metallo gels and organic nano particles.
- Utilized formation of photoactive vesicles and reverse vesicles in organic guest inclusion and conducted photophysical characterization and analysis of various photoactive molecules
- Ensuring efficient utilization of test and research methods for conversion of low to high energy photons using pre-organized chromophore assemblies
- Employed excellent skills in writing scientific papers, patents and books as well as preparing project reports/ updates for internal and external presentations
- Imparted technical support and guidance to technicians undertaking preparatory work to ensure standard procedure and method utilization for reliable test results and project outcome
- Presented scientific data in conferences and meetings with collaborators of the project. Deciphering journals for the extraction of new knowledge and information.

Research Assignments

- Played a key role in the development of materials for the upconversion of photons through triplet triplet annihilation
Sensitized upconversion (SUC) has attracting increasing interests because the efficient use of low-energy photons provides opportunity to revolutionize a wide range of photon energy conversion systems including photovoltaic devices. SUC needs a triplet sensitizer and an emitter, and upconversion takes place through triplet-triplet annihilation (TTA) between emitter triplets. The self-assembly of suitable dye molecules is expected to significantly improve the TTA-based SUC efficiency, which would also allow to control the triplet migration and annihilation processes on the molecular level.
- Presently using metal and covalent organic frameworks for the upconversion of Photons as these materials could align the chromophores in a channel in suitable separations which favors the efficient triplet energy migration

EDUCATIONAL CREDENTIALS

Post-Doctoral Fellow ♦ Kyushu University Fukuoka, Japan (Dec'14-Jul'16)

Topic: Triplet energy migration based photon upconversion using pre-organized chromophore array

JSPS Post-Doctoral Fellow ♦ Kyushu University Fukuoka, Japan (Nov'12-Nov'14)

Topic: Upconversion of photons through triplet-triplet annihilations

Ph.D. (Supramolecular Chemistry) ♦ Central Salt & Marine Chemicals Research Institute (CSIR), Bhavnagar (2007-2012)

Thesis: Design and syntheses of new receptor molecules for recognition of biologically important ions and studies on supramolecular self assembly

M.Sc. (Chemistry) ♦ University of Kalyani, West Bengal (2005-2007)

B.Sc. (Hons - Chemistry) ♦ The University of Burdwan, West Bengal (2001-2005)

National Level Exam Qualified

- Qualified CSIR-UGC/NET (December 2006), CSIR-JRF
- Qualified GATE (All India Rank 213) (February 2007)
- One of the three short listed candidates for the Young Scientist award in 100th Indian Science Congress

PUBLICATIONS

- Triplet energy migration-based photon upconversion by amphiphilic molecular assemblies in aerated water, Hironori Kouno, Taku Ogawa, Shogo Amemori, **Prasenjit Mahato**, Nobuhiro Yanai and Nobuo Kimizuka, *Chem. Sci.* 2016, 7, 5224 - 5229.
- An overview of the recent developments on Hg²⁺ recognition **Prasenjit Mahato**, Sukdeb Saha, Priyadip Das, Hridesh Agarwalla, Amitava Das, *RSC Adv.*, 2014, 4, 36140-36174. (**Impact factor: 3.708**) (**Citation: 44**)

- Interfacial and Film Formation Behaviour of Photoactive Ru(II)bipyridyl Based Metallosurfactants and a Monolayer Based Logic Gate Approach. **Prasenjit Mahato**, Sukdeb Saha, Sipra Choudhury, Amitava Das. *ChemPlusChem* 2012, 77, 1096-1105. **(Impact factor: 3.026) (Citation: 8)**
- Rare Example of a TICT Based Optical Responses for the Specific Recognition of Cr³⁺ by a 2,2':6',2''-terpyridine Derivative and Demonstration of Multiple Logic Operations. **Prasenjit Mahato**, Sukdeb Saha, Amitava Das. *J. Phys. Chem. C* 2012, 116, 17448-17457. **(Impact factor: 4.772) (Citation: 32)**
- Ratiometric Detection of Cr³⁺ and Hg²⁺ by a Naphthalimide-Rhodamine Based Fluorescent Probe. **Prasenjit Mahato**, Sukdeb Saha, E. Suresh, Rosa Di Liddo, Pier Paolo Parnigotto, Maria Teresa Conconi, Manoj K. Kesharwani, Biswajit Ganguly, Amitava Das *Inorg. Chem.* 2012, 51, 1769-1777. **(Impact factor: 4.762) (Citation: 178; One of the Most Read Inorg. Chem. Articles of 2012)** <http://pubs.acs.org/doi/abs/10.1021/ic202073q>
- Solvent-dependent Aggregation Behavior of a New Ru(II)-polypyridyl Based Metallosurfactant. **Prasenjit Mahato**, Sukdeb Saha, Sipra Choudhury, Amitava Das *Chem. Commun.* 2011, 47, 11074-11076. **(Impact factor: 6.834) (Citation: 21)**
- Zn(II)-Cyclam Based Chromogenic Sensors for Recognition of ATP in Aqueous Solution Under Physiological Conditions and Their Application as Viable Staining Agents for Microorganism. **Prasenjit Mahato**, Amrita Ghosh, Sanjiv K. Mishra, Anupama Shrivastav, Sandhya Mishra, Amitava Das *Inorg. Chem.* 2011, 50, 4162. **(Impact factor: 4.762) (Citation: 26)**
- Recognition of Hg²⁺ Using Diametrically Disubstituted Cyclam Unit. Prasenjit Mahato, Amrita Ghosh, Sukdeb Saha, Sandhya Mishra, Sanjiv K. Mishra, Amitava Das *Inorg. Chem.* 2010, 49, 11485-11492. (Impact factor: 4.762) (Citation: 48)
- Zn(II) based Colorimetric Sensor for ATP and its use as a Viable Staining Agent in Pure Aqueous Media of pH 7.2. **Prasenjit Mahato**, Amrita Ghosh, Sanjiv K. Mishra, Anupama Shrivastav, Sandhya Mishra, Amitava Das *Chem. Commun.* 2010, 46, 9134-9136. **(Impact factor: 6.834) (Citation: 29)**
- An interrupted PET coupled TBET process for the design of a specific receptor for Hg²⁺ and its intracellular detection in MCF7 cells. Sukdeb Saha, **Prasenjit Mahato**, Mithu Baidya, Sudip K. Ghosh, Amitava Das *Chem. Commun.* 2012, 48, 9293-9295. **(Impact factor: 6.834) (Citation: 37)**
- A taco Complex Derived from a Bis-crown Ether Capable of Executing Molecular Logic Operation through Control Reversible Complexation. Amal K. Mandal, Priyadip Das, **Prasenjit Mahato**, Suhas Acharya, Amitava Das 2012, *J. Org. Chem.* 2012, 77, 6789-6800. **(Impact factor: 4.721) (Citation: 20)**
- Recognition of Hg²⁺ and Cr³⁺ in Physiological Conditions by a Rhodamine Derivative and Its Application as a Reagent for Cell-Imaging Studies. Sukdeb Saha, **Prasenjit Mahato**, G. Upender Reddy, Arindam Chakraborty, E. Suresh, Mithu Baidya, Sudip Ghosh, Amitava Das *Inorg. Chem.* 2012, 51, 336-345. **(Impact factor: 4.762) (Citation: 93)**
- Rhodamine-Alginate Conjugate as Self Indicating Gel Beads for Efficient Detection and Scavenging of Hg²⁺ and Cr³⁺ in Aqueous Media. Sukdeb Saha, Mahesh U. Chhatbar, **Prasenjit Mahato**, Praveen L., A. K. Siddhanta, Amitava Das *Chem. Commun.* 2012, 48, 1659-1661. **(Impact factor: 6.834) (Citation: 67)**
- Specific Recognition and Sensing of CN⁻ in Sodium Cyanide Solution. Sukdeb Saha, Amrita Ghosh, **Prasenjit Mahato**, Sandhya Mishra, Sanjiv K. Mishra, E. Suresh, Satyabrata Das, Amitava Das *Org. Lett.* 2010, 12, 3406-3409. **(Impact factor: 6.364) (Citation: 107)**
- Urea/thiourea Derivatives and Zn(II)-DPA Complex as Receptors for Anionic Recognition— A brief account. Priyadip Das, **Prasenjit Mahato**, Amrita Ghosh, Amal K. Mandal, Tanmay Banerjee, Sukdeb Saha, Amitava Das *J. Chem. Sci.* 2011, 123, 175-186. **(Impact factor: 1.224) (Citation: 2)**
- Comparative Study of Porphyrin Derivatives in Monolayers at the Air-water Interface and in Langmuir-Blodgett films. Amrita Ghosh, **Prasenjit Mahato**, Sipra Choudhury, Amitava Das 2011, *Thin Solid Films* 2011, 519, 8066-8073. **(Impact factor: 1.888) (Citation: 10)**

MANUSCRIPT UNDER PREPARATION

- Sensitizer-free optical Upconversion by unusual S₀-T₁ excitation in the crystals of bromo-anthracene derivatives, **Prasenjit Mahato**, Nobuhiro Yanai, and Nobuo Kimizuka, 2016.
- First example of TTA photon upconversion using metallo-supramolecular gel, 2015, **Prasenjit Mahato**, Masanori Hosoyamada, Nobuhiro Yanai, and Nobuo Kimizuka, 2016.
- First example of optical upconversion using sensitizer-annihilator based organic nano-crystals. **Prasenjit Mahato**, Taku Ogawa, Nobuhiro Yanai and Nobuo Kimizuka, manuscript will be communicated to *Cryst. Eng. Comm.* (Invited article).

PATENTS

- Zn(II) Based Colorimetric Sensor and Process for the Preparation thereof. **Prasenjit Mahato**, Amrita Ghosh, Sanjiv K. Mishra, Anupama Shrivastav, Sandhya Mishra, Amitava Das
USA patent Publication No: US20130130306 A1, Publication date, 23, 05.2013.
 - Photon Upconverter, **Prasenjit Mahato**, Nobuhiro Yanai, and Nobuo Kimizuka
USA patent Application No: 62/181302; Application Date, 06.18.2015.
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BOOKS PUBLISHED

- "New Chemosensors for Bio-imaging and Molecular Logic Gate Operations" **Prasenjit Mahato**, Lambert Academic Publishing, 2014, ISBN 978-3-659-34091-8
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Date of Birth: 16th March 1984

Languages Known: English, Hindi & Bengali

References: Available on request

