

PERSONAL PROFILE



1. Name of the Teacher : DR. SANTANU MAJUMDAR
2. Department : Department of Chemistry
3. Designation : Assistant Professor
4. Email id : santanu@rtuassam.ac.in
5. Contact no. : 7001669626/9434857518
6. Teaching Experience : 1 year 6 months (up to 31st March, 2025)

Class	Teaching Experience (years)	Topics
UG	1 year 6 months	Inorganic Chemistry
PG	1 year 6 months	Inorganic Chemistry
PhD Course work		

7. Research area of interest :
 - ❖ Exploration of diverse supramolecular systems including crystals, metallogels, organogels, metallohydrogels, bio-macromolecule based gels, self-healing materials.
 - ❖ Synthesis of different gel-nano composites using graphene oxide, transition metal dichalcogenides (MoS_2 , MoSe_2 and WS_2), and hexagonal boron nitride nano-sheets for semiconducting device fabrication.
 - ❖ Synthesis of mechanically flexible self-healing materials and investigated the phenomena of intense light-matter interactions in terms of higher-order non-linear optical properties.
 - ❖ Exploration of the fast chemical-strategy of isomeric-distinction among two organic constituents through the metallogel-formation techniques.
8. Google Scholar ID : <https://scholar.google.co.in/citations?user=TV-6XL8AAAAJ&hl=en>
9. Vidwan ID : 614436 (<https://vidwan.inflibnet.ac.in/profile/614436>)
10. Academic activities : Maintaining the high quality of academic standard, keeping updated records of all classes taken, assisting students in every way possible in all academic and research activities, preparing them for all national level competitive examinations like JAM, NET, GATE etc., engaging to keep them updated in recent Chemistry related researches specially on the development of versatile organic ligands and emerging organic-inorganic materials and their applicability in the domain of physical, chemical and biological sciences.

a. *Seminar/Conference attended:*

Title of the paper/poster	Name of the seminar/conference	Date and Venue	Organized by	Sponsor (s)
	Design, Synthesis, Characterization, Reactivity, Theoretical Study and Application of Different Advanced Functional Materials	27th March, 2019	Department of Chemistry, The University of Burdwan 713104, West Bengal, India	

	International Conference on Functional Materials (ICFM - 2020)	6 th -8 th January, 2020	Indian Institute of Technology (IIT), Kharagpur, West Bengal, India	
	Recent Advances in Chemistry and Material Science (RACMS-2022)	July 30-31 & August 02-03, 2022	The Indian Chemical Society in association with the Bangladesh Chemical Society, Bangladesh and Department of Chemistry, Jadavpur University, Kolkata	
	International Conference on Green Initiatives in Chemical Sciences for Sustainable Development (ICGICSSD – 2022)	18-19 November 2022	Joint collaboration with Association of Chemistry Teachers (ACT) and Indian National Science Academy (INSA), New Delhi on the occasion of International Year of Basic Sciences for Sustainable Development - 2022 (IYBSSD-2022) at Sikkim Manipal Institute of Technology	
	International Conference on Recent Trends in Chemical Sciences-2022	16-18 December 2022	Department of Chemistry & Chemical Biology, IIT(ISM) Dhanbad, under the aegis of Indian Chemical Society, Kolkata	
	Chemistry for Sustainability (recognized as Outstanding Paper Awardee from Royal Society of Chemistry)	13-14 August 2024	Department of Chemistry, University of North Bengal 734013, West Bengal, India.	

b. *Workshops attended:*

Name of the Workshop	Date	Venue	Organized by	Sponsor
A Seven Day National Workshop cum Hands-on Training Program on Single Crystal XRD	26th November - 2nd December 2019	The University of Burdwan 713104, West Bengal, India.	University Science Instrumentation Centre (USIC), The University of Burdwan 713104, West Bengal, India	

c. *Details of publications in UGC recognized/Peer reviewed/Indexed journals:*

- Halide-Specific Solid-State Stabilization of H_2O_2^+ and Efficient Tuning of the Device-Performances of Semiconducting Photo-responsive Diodes. **S. Majumdar**, A. Dey, A. Bandhyopadhyay, G. Lepcha, R. K. Mondal, V. K. Gupta, P. P. Ray*, B. Dey*, **J. Phys. Chem. C**. 127 (2023) 3417-3431.
- Cd-Based Metallohydrogel Composites with Graphene Oxide, MoS_2 , MoSe_2 , and WS_2 for Semiconducting Schottky Barrier Diodes. **S. Majumdar**, A. Dey, R. Sahu, S. Dhibar, P. P. Ray*, and B. Dey*, **ACS Appl. Nano Mater.** 3 (2020) 11025-11036.
- Protein-Based Self-Healing Cu(II)-Metallohydrogels: Efficient Third Order Nonlinear Optical Materials in Terms of an Intensity Dependent Refractive Index and Two-Photon Absorption. **S. Majumdar**, T. Singha, S. Dhibar, A. Mandal, P. K. Datta*, and B. Dey*, **ACS Appl. Electron. Mater.** 2 (2020) 3678-3685.
- A croconate-directed supramolecular self-healable Cd(II)-metallogel with dispersed 2D-nanosheets of hexagonal boron nitride: a comparative outcome of the charge-transport phenomena and nonlinear rectifying behaviour of semiconducting diodes. **S. Majumdar**, B. Pal, R. Sahu, K. S. Das, P. P. Ray*, B. Dey*, **Dalton Trans.** 51 (2022) 9007- 9016.
- Itaconic and citraconic acid directed thixotropic and self-healable supramolecular metallogels of M(II) (M=Co, Cu, Zn, and Cd) for the growth-inhibitory potency against human pathogenic microbes. **S. Majumdar**, D. Mukherjee, G. Lepcha, K. K. Saha, K. S. Das, I. Pal, N. C. Mandal, B. Dey*, **New J. Chem.** 47 (2023) 9643-9653.
- Establishment of different aliphatic amines-based rapid self-healing Mg(II)-Metallogels: Exploring the morphology, rheology and intriguing Semiconducting Schottky Diode characteristics. **S. Majumdar**, B. Pal, G. Lepcha, K. S. Das, P. P. Ray*, B. Dey*, **New J. Chem.** 47 (2023) 4752-4760.
- Strategic fabrication of efficient photo-responsive semiconductor electronic diode-devices by Bovine Serum Albumin protein-based Cu (II)-metallohydrogel scaffolds. **S. Majumdar**, P. P. Ray, R. Sahu, A. Dey*, B. Dey*, **Int. J. Biol. Macromol.** 195 (2022) 287-293.
- DNA mediated graphene oxide (GO)-nanosheets dispersed supramolecular GO-DNA hydrogel: An efficient soft-milieu for simplistic synthesis of Ag-NPs@GO-DNA and Gram + ve/-ve bacteria-based Ag-NPs@GO-DNA-bacteria nano-bio composites. **S. Majumdar**, M. Ghosh, S. Mukherjee, B. Satpati, B. Dey*, **J. Mol. Liq.** 342 (2021) 117482.
- Electronic charge transport phenomena directed smart fabrication of Metal-Semiconductor based electronic junction device by a supramolecular Mn (II)-Metallogel. **S. Majumdar**, S. Sil, R. Sahu, M. Ghosh, G. Lepcha, A. Dey, S. Mandal, P. P. Ray*, B. Dey*, **J. Mol. Liq.** 338 (2021) 116769.
- Squaric Acid driven supramolecular metallogels of Cd(II) and Zn(II): Sensitive inhibitors for multi-drug resistance ESKAPE pathogens. **S. Majumdar**, G. Lepcha, K. T. Ahmed, S. R. Biswas, B. Dey*, **J. Mol. Liq.** 368 (2022) 120619.
- An Aromatic Acid Based Supramolecular Zn(II)-metallogel for Fabricating Light-sensitive Metal-semiconductor Junction Type Schottky Diode with Satisfactory Rectification Ratios. **S. Majumdar**, A. Dey, R. Sahu, G. Lepcha, A. Dey, P. P. Ray*, B. Dey*, **Mater. Res. Bull.** 157 (2022) 112003.
- Exploring an aromatic dicarboxylic acid-grafted supramolecular Cd(II)-metallogel: The mechanically flexible stuff for achieving MoS_2 , MoSe_2 , WS_2 , GO, and h(BN) 2D nanosheets-dispersed versatile supramolecular gel-nano composites. **S. Majumdar**, G. Lepcha, R. Sahu, B. Dey*, **J. Phys. Chem. Solids** 170 (2022) 110903.
- Suberic acid based supramolecular metallogels of Ni(II), Zn(II), and Cd(II) for anti-pathogenic activity and semiconducting diode fabrication. G. Lepcha, **S. Majumdar**, B. Pal, K. T. Ahmed, I. Pal, B. Satpati, S. R. Biswas, P. P. Ray*, B. Dey*, **Langmuir** 39 (2023) 7469-7483.
- Exploration of Variable Solvent Directed Self-Healable Supramolecular M(II)-Metallogels (M =

- Co, Ni, Zn) of Azelaic Acid: Investigating Temperature-Dependent Ion Conductivity and Antibacterial Efficiency. I. Pal, **S. Majumdar**, G. Lepcha, K. T. Ahmed, S. K. Yatirajula, S. Bhattacharya, R. Chakravarti, B. Bhattacharya, S. R. Biswas, B. Dey *, **ACS Appl. Bio Mater.** 6 (2023) 5442-5457.
15. Comparative outcomes of the voltage-dependent current density, charge transportation and rectification ratio of electronic devices fabricated using mechanically flexible supramolecular networks. B. Pal, **S. Majumdar**, I. Pal, G. Lepcha, A. Dey, P. P. Ray*, B. Dey*, **Dalton Trans.** 53 (2024) 7912-7921.
 16. 4, 4'-Bipyridine-based Ni (II)-metallogel for fabricating a photo-responsive Schottky barrier diode device. P. Das, **S. Majumdar**, A. Dey, S. Mandal, A. Mondal, S. Chakrabarty, P. P. Ray*, B. Dey*, **New J. Chem.** 45 (2021) 15920-15927.
 17. Reversible inverse cooling phenomena by trinity of triethylamine, L-glutamic acid and water. B. Dey*, **S. Majumdar**, S. Dhibar, **J. Mol. Liq.** 323 (2021) 114596.
 18. Investigating charge transportation and photo-responsive outcome of a Schottky diode fabricated by 2-amino terephthalic acid directed supramolecular Mn(II)-metallogel. B. Pal, **S. Majumdar**, K. S. Das, G. Lepcha, I. Pal, P. P. Ray*, B. Dey*. **J. Phys. Chem. Solids** (182) 2023 111612.
 19. Solvent-Driven Variations of Third-Order Nonlinear Thermo-Optical Features of Glutaric Acid-Directed Self-Healing Supramolecular Ni(II) Metallogels. I. Pal, N. K. Pathak, **S. Majumdar**, G. Lepcha, A. Dey, S. K. Yatirajula, U. Tripathy, B. Dey*, **Langmuir** 39 (2023) 16584-16595.
 20. Unveiling the Semiconducting Diode Property through Current Density-Voltage Features with Effective Interface Mobility and Conductivity of Nitroterephthalic Acid-Directed Supramolecular Co(II)/Cu(II) Metallogels. I. Pal, A. Biswas, **S. Majumdar**, G. Lepcha, B. Pal, P. P. Ray, B. Dey*, **ACS Appl. Eng. Mater.** 1 (2023) 3005-3015.
 21. Optical Nonlinearity of Semiconducting Cd(II) Metallogel in the Femtosecond Regime with Two-, Three-, and Four-Photon Absorption. T. Singha, B. Pal, **S. Majumdar**, G. Lepcha, I. Pal, P. P. Ray, B. Dey*, P. K. Datta*, **ACS Appl. Opt. Mater.** 2 (2024) 474-484.
 22. Adipic Acid Directed Self-Healable Supramolecular Metallogels of Co(II) and Ni(II): Intriguing Scaffolds for Comparative Optical-Phenomenon in terms of Third Order Optical Non-Linearity. G. Lepcha, T. Singha, **S. Majumdar**, A. K. Pradhan, K. S. Das, P. K. Datta*, B. Dey*, **Dalton Trans.** 51 (2022) 13435-13443.
 23. A supramolecular Cd (II)-metallogel: an efficient semiconductive electronic device. S. Dhibar, A. Dey, **S. Majumdar**, D. Ghosh, A. Mandal, P. P. Ray*, B. Dey*, **Dalton Trans.** 47 (2018) 17412-17420.
 24. Solvent and Stoichiometry-dependent Versatile Organogelation and Robust Crystallization from Supramolecular Association of Adipic Acid and Triethanolamine. G. Lepcha, I. Pal, **S. Majumdar**, Y. Dhasmana, S. Mondal, E. Zangrando, D. Chopra*, B. Dey*, **New J. Chem.** 48 (2024) 9322-9332.
 25. MoS₂ and MoSe₂ 2D nanosheets-based bio-active supramolecular nano-structural scaffold-capped potent Ag-NPs: Exploring morphological, anti-bacterial and anticancer property. G. Lepcha, R. Sahu, **S. Majumdar**, S. Banerjee, A. Bhowmick, S. Sen, B. Panda, D. Dhak, K. Sarkar, and B. Dey*. **New J. Chem.** 47 (2023) 15357-15365.
 26. Organic-Acid-Mediated Luminescent Supramolecular Tb (III)-metallogel Applied in an Efficient Photosensitive Electronic Device with Excellent Charge Transport Properties. S. Dhibar, A. Dey, **S. Majumdar**, A. Dey, P. P. Ray*, B. Dey*, **Ind. Eng. Chem. Res.** 59 (2020) 5466-5473.
 27. Terephthalic acid-directed supramolecular Cu(II)-metallogel for photosensitive semiconducting Schottky diode with promising electronic charge transportation. S. Dhibar, A. Dey, **S. Majumdar**, P. P. Ray*, B. Dey*, **Int J Energy Res.** 45 (2021) 5486-5499.
 28. Ni(II) and Zn(II)-metallogels based anti-bacterial scaffolds for fabricating light-responsive junction type semiconducting diodes with non-ohmic conduction mechanism. G. Lepcha, B. Pal, **S. Majumdar**, K. T. Ahmed, I. Pal, S. R. Biswas, P. P. Ray*, and B. Dey*, **Mater. Adv.** 4 (2023) 2595-2603.
 29. Exploring the studies of charge transportation of an aromatic acid based Co (II)-Metallogel scaffold fabricated Schottky device. A. Dey, S. Sil, **S. Majumdar**, R. Sahu, M. Ghosh, G. Lepcha, P. P. Ray*, B. Dey*, **J. Phys. Chem. Solids** 160 (2022) 110300.
 30. Chemo-responsiveness of aliphatic and aromatic amines on LMWG directed supramolecular metallogel: A morphological scrutiny of metallogel decomposition. I. Pal, **S. Majumdar**, G. Lepcha, B. Dey*, **J. Indian Chem. Soc.** 100 (2023) 101084.
 31. Development of Supramolecular Semiconducting Mn(II)-Metallogel Based Active Device with Substantial Carrier Diffusion Length. S. Dhibar, A. Dey, A. Dey, **S. Majumdar**, D. Ghosh, P. P. Ray*, B. Dey*, **ACS Appl. Electron. Mater.** 9 (2019) 1899-1908.

32. The development of a rapid self-healing semiconducting monoethanolamine-based $\text{Mg}(\text{OH})_2$ metallogel for a Schottky diode application with a high ON/OFF ratio. S. Dhibar, A. Dey, A. Dey, **S. Majumdar**, A. Mandal, P. P. Ray*, B. Dey*, **New J. Chem.** 43 (2019) 15691-15699.
33. A Supramolecular Gel of Oxalic Acid-Monoethanolamine for Potential Schottky Barrier Diode Application. S. Dhibar, A. Dey, D. Ghosh, **S. Majumdar**, A. Dey, P. Mukherjee, A. Mandal, P. P. Ray*, B. Dey*, **Chemistry Select** 4 (2019) 1535-1541.
34. Triethylenetetramine-Based Semiconducting Fe (III) Metallogel: Effective Catalyst for Aryl-S Coupling. S. Dhibar, A. Dey, D. Ghosh, **S. Majumdar**, A. Dey, P. P. Ray*, B. Dey*, **ACS Omega** 5 (2020) 2680-2689.
35. Comparative Vision of Nonlinear Thermo-Optical Features and Third-Order Susceptibility of Mechanically Flexible Metallosupramolecular Self-Repairing Networks with Isomeric Organic Acids. I. Pal, N. K. Pathak, **S. Majumdar**, G. Lepcha, A. Dey, S. K. Yatirajula, U. Tripathy*, B. Dey*, **Inorg. Chem.** 63 (2024) 12003-12016.
36. Solvent-directed bioactive supramolecular Zn(II)-metallogels: Exploring semiconducting aptitudes of fabricating p-n junction and Schottky devices. D. Saha, T. Dey, I. Pal, A. Kundu, **S. Majumdar**, S. Sadhu, S. K. Yatirajula, J. Rath, S. Ray, B. Dey*, **ACS Appl. Bio Mater.** 7 (2024) 5609-5621.
37. Mechanically Flexible Self-Healing Mg(II)-Metallogel: Approach of Triggering the ROS-Induced Apoptosis in Human Breast Cancer Cells. D. Saha, D. Talukdar, I. Pal, **S. Majumdar**, G. Lepcha, S. Sadhu, S. K. Yatirajula, G. Das, B. Dey*, **Langmuir** 40(2024) 19816-19829.
38. Zn(II)-based mechanically flexible metallosupramolecular network: Investigating rheology, morphology, anti-bacterial effect and semiconducting device performances. I. Pal, S. Ghosh, S. Sadhu, A. Kundu, **S. Majumdar**, S. K. Yatirajula, J. Rath, P. P. Ray, B. Dey*, **Inorg. Chim. Acta.** 574 (2024) 122413.-11590.
39. Organic and Coordination Polymer-Based Gelators-Directed Mechanically Self-Repairing Flexible Metallosupramolecular Soft Scaffolds. I. Pal, S. Ghosh, D. Saha, **S. Majumdar**, S. K. Yatirajula, P. P. Ray, B. Dey*, **Inorg. Chem.** 2025, (<https://doi.org/10.1021/acs.inorgchem.4c04986>).

e. *Publication of Chapter(s) in Books:*

[Name of author(s), "Chapter Title", Title of Book, ISBN, Name of Editor(s), Name of Publisher, Publication Date, Page no., DOI (if available)]

f. *Publication of Books (only those considered for API Score):*

[Name of author (s), Name of Book, Year of Publication, Name of Publisher, ISBN.]

g. *Patents :*

Name of the Patent	Patent Number	Date of Grant	Granting authority

h. *Research Projects :*

(i). *Completed*

Principal Investigator/ Co-Investigator (s) and Department (s)	Title of the project	Funding Agency	Duration	Amount(Rs.)

(ii). *Ongoing*

Principal Investigator/ Co-Investigator (s) and Department (s)	Title of the project	Funding Agency	Duration	Amount(Rs.)

- i. *Number of citations received in the year* : 687 (Google Scholar)
- j. *h-index (based on Scopus/Web of science)* :16
- k. *Awards/Fellowship/Recognition at State/National/International level from Government/Recognized bodies* :

Name of the Award/Fellowship/Recognition	Conferring agency
1. Qualified Council of Scientific and Industrial Research test with All India Rank of 74 for the national level exam (CSIR-NET JRF 2017) (Roll No-135329).	Council of Scientific and Industrial Research (CSIR), Government of India
2. Qualified Graduate Aptitude Test in Engineering (GATE-2019)	IIT Madras
3. Recipient of Inspire Scholarship by Department of science and technology, Government of India for BSc. and MSc. (2012-2017) for being in the top 1% in 10 and 10+2 board exams.	Department of science and technology, Government of India

- l. *Abroad visit:*

Name and address of the institute/ academic society	Purpose	Period

- m. *Extension Activities/Outreach programme conducted in collaboration with industry / community / NGOs /through NSS/NCC/Red Cross/ Youth Red Cross etc:*

Title of the activity	Organising unit / agency / Collaborating agency	Number of teachers coordinated In the activity	Number of students participated

- n. *Any other achievements:*

Signature of Teacher in full

Santanu Majumdar