MAINAK BANERJEE, Ph.D

Professor, Department of Chemistry,
BITS-Pilani- K.K. Birla Goa Campus,
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Education:

- **Ph. D (Sc.)** degree was obtained for the thesis entitled ***"Synthetic studies on rearranged linear abietane diterpenoids and related compounds"*** from Jadavpur University in May 2006. The experimental work was carried out in the Medicinal Chemistry division of IICB, Kolkata-700032.
- **M. Sc.** from the University of Calcutta with specialization in Organic Chemistry in 1998.
- **B. Sc.** from the University of Calcutta with Honours in Chemistry in 1996.

Personal Information:

- **Date of birth** : April 03, 1975
- **Nationality** : Indian
- **Sex** : Male
- **Marital status** : Married

Research and Teaching Experience:

Fifteen years of UG and PG teaching and Twenty years of Research (Post-PhD).
Total no. of Publications: 73 (all international); 1 book chapter; 4 patents; total citation: 2228; h-index: 25; i10-index 45; Best cited paper: *JACS*, 2009, *131*, 7524–7525 (no. of citations: 453).
International and National Conference Presentations/Talks: >40
ORCHID ID: orcid.org/0000-0002-6833-5531

Research interests:

- ✓ **Green chemistry:** Reactions in organized aqueous media; on-water reactions; microwave-assisted reactions; catalyst free reactions.
- ✓ **Mechanochemistry**: A simple and convenient route for organic transformations. Explore both Ball-Milling and Hand-Grinding techniques for the synthesis of bioactive heterocycles.
- ✓ **Nanochemistry:** Custom-made synthesis of smart nanomaretials and their application in bio-/nano-technology such as drug/gene delivery vehicles.
- ✓ **Molecular Sensors:** Development of small organic molecule based fluorescent probes, carbon-nanomaterial based probes, supramolecular sensing for toxic analytes, heavy metals, biological species (e.g. microbes) etc.

- ✓ **Supramolecular chemistry:** Use of cucurbiturils for host-guest recognition-based sensing applications, design of new amphiphiles and study of their aggregation behaviour.
- ✓ **Method development:** Development of new or improved methods for the preparation/purification/isolation of various organic molecules in the purview of their industrial applications. This includes C-H bond activation, cyclo-annulation, sulphonation, halogenation, etc.

A brief personal statement:

Dr. Mainak Banerjee is a Ph.D form Indian Institute of Chemical Biology, a CSIR foundation. He has twenty years of research experience as a part of a group and fifteen years of research and teaching experience as an individual. His fields of interest are a) synthetic organic chemistry; b) green chemistry; c) mechanochemistry; d) supramolecular- and nano-chemistry; and e) molecular sensors; f) method development for industries. He had been associated with premier research groups in more than one university in abroad during his post-doctoral studies.

Since April, 2009, he is working as a faculty in the Department of Chemistry at BITS Pilani- K. K. Birla Goa Campus. For the last fifteen years, he and his teammates are in pursuance of the development of "green" synthetic methodologies, mechanochemical organosynthesis, custom-made synthesis of smart nanomaterials, development of novel methods including C-H bond activation and also, the development of chemosensors for different toxic analytes.

His first brush at research was after his masters as a project associate under Prof. H. Ila of Indian Institute of Technology, Kanpur, where, for little more than one year, he worked on the development of synthetic methodologies for various heterocycles using α–oxoketene dithioacetals.

He pursued his doctoral studies at Indian Institute of Chemical Biology, Kolkata, under the supervision of Dr Asish K Banerjee. During this period, he carried out total syntheses of several newly isolated, biologically important, rearranged abietane diterpenoids. In addition, he developed an efficient synthetic route for angularly functionalized hydrofluorene derivatives.

During his first postdoctoral research at Pusan Natl Univ, South Korea, he worked on the design and photosynthesis of crown ethers, which act as heavy metal sensors. In addition, he worked on organic photovoltaics, a field of immense current interest, which can be used as a substitute for conventional energy sources.

Next, about two years he worked in POSTECH, South Korea, under the supervision of Prof Kimoon Kim. During his stint with Prof. Kim he had worked on the development of a cheap alternative system of well-known bioconjugate, biotin-avidin, which can be used equally efficiently in biotechnology. As a first demonstration, the newly developed chemical conjugate, CB[7]-ferrocene had shown better efficiency than biotin-avidin system in membrane protein isolation. He had also been involved in the pioneer work of the development of postsynthetic modification strategy for the syntheses of catalytically active chiral metal-organic frameworks and their utilization in asymmetric synthesis. In due course he has published several research articles in peer-reviewed high-impact international journals (such as *Nature Chemistry*, vol. 3, p-154, impact factor: 21.8).

Dr. Banerjee joined BITS Pilani KK Birla Goa campus at the Department of Chemistry in 2009 as an Assistant Professor, subsequently promoted to Professor in 2021.

He is engaged as a reviewer of several international journals (RSC, ACS, Elsevier, Springer-Nature etc.) and projects from various funding agencies.

His current research activities are supported by different funding agencies like DST, SERB, CSIR, BRNS, DBT, UGC-DAE and various industries.

Affiliations:

2021, June – till date

Department of Chemistry,
BITS, Pilani- K.K. Birla Goa Campus,
NH 17B, By Pass Road, Zuarinagar, 403726, Goa, INDIA.
Designation: **Professor**

2016, June – June, 2021

Department of Chemistry,
BITS, Pilani- K.K. Birla Goa Campus,
NH 17B, By Pass Road, Zuarinagar, 403726, Goa, INDIA.
Designation: **Associate Professor**

2009, Apr – 2016, May

Department of Chemistry,
BITS, Pilani- K.K. Birla Goa Campus,
NH 17B, By Pass Road, Zuarinagar, 403726, Goa, INDIA.
Designation: **Assistant Professor**

2007, Aug – 2009, Feb

Department of Chemistry,
POSTECH, San 31, Hyoja Dong, Nam-Gu, Pohang-790 784, Republic of Korea
Designation: **Postdoctoral Fellow**
Supervisor: Prof. Kimoon Kim

2006, Aug – 2007, July

Department of Chemistry
Pusan National University, Busan- 609 735, Republic of Korea.
Designation: **Postdoctoral Fellow**
Supervisor: Prof. Ung Chan Yoon

2005, Sep–2006, July:

Chemgen Pharma International Pvt. Ltd. (a CRO)
Saltlake city, Kolkata 700 091, India
Designation: **Research Associate**
Job type: Research and Development

2000, Feb–2005, Aug:

Department of Chemistry
Indian Institute of Chemical Biology, 4, Raja S. C. Mullick Road, Kolkata-700032, India
Designation: **CSIR JRF and SRF**

Supervisor: **Dr. Asish Kr. Banerjee**

1999, Jan-2000, Feb:

Department of Chemistry
Indian Institute of Technology, Kanpur, UP 208016, India.
Designation: **Project Associate**
Supervisor: **Prof. H. Ila**

Research papers published in peer-reviewed journals:

1. First Total Synthesis of the 4a-Methyltetrahydrofluorene Diterpenoids (±)- Dichroanal B and (±)-Dichroanone, **Banerjee**, **M**; Mukhopadhyay, R; Achari, B; Banerjee, A. K. *Org. Lett*. **2003**, *5*, 3931-3933 (current impact factor: 6.1).
2. A General Route to 4a-Methylhydrofluorene Diterpenoids: Total Syntheses of Taiwaniaquinones D and H, Taiwaniaquinol B, Dichroanal B and Dichroanone, **Banerjee**, **M**; Mukhopadhyay, R; Achari, B; Banerjee, A. K. *J. Org. Chem.* **2006**, *71*, 2787-2796 (current impact factor: 4.2).
3. An Improved Synthetic Route to Angularly Functionalised Hydrofluorene Derivatives Through Pd(0)-Catalyzed Heck Reaction, **Banerjee, M**; Mukhopadhyay, R; Achari, B; Banerjee, A. K. *Synthesis*, **2006**, 1263-1272 (current impact factor: 2.5).
4. Lariat-Crown Ether Based Fluorescence Sensors for Heavy Metal Ions, Maeda, H.; Tierney, D. L.; Mariano, P. S.; **Banerjee, M**.; Cho, D. W.; Yoon, U. C. *Tetrahedron*, **2008**, *64*, 5268-5278 (current impact factor: 2.4).
5. Chiral Metal-Organic Porous Materials: Synthetic Strategies and Applications in Chiral Separation and Catalysis, Kim, K.; **Banerjee, M.**; Young, M.; Das, S. Invited review, *Top. Curr. Chem.*, **2010**, *293*, 115–153 (current impact factor: 8.8).
6. Postsynthetic Modification Switches an Achiral Framework to Catalytically Active Homochiral Metal-Organic Porous Materials, **Banerjee, M.**; Das, S., Young, M.; Choi, H. J., Huyn, M. H., Kim, K. *JACS*, **2009**, *131*, 7524–7525 (current impact factor: 16.4).
7. Postsynthetic modification switches, an achiral framework to catalytically active homochiral metal-organic porous materials, **Banerjee, Mainak**; Yoon, Minyoung; Das, Sunirban; Choi, Hee Jung; Hyun, Myung Ho; Kim, Kimoon**,** ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY, 2009, *238*, 737-737, INOR-601, Publisher: American Chemical Society.
8. Membrane protein isolation using ferrocenemethylamine-cucurbit [7] uril pair: Replacement of biotin-avidin pair, Don-Wook Lee, Kyeng Min Park, **Mainak Banerjee**, Taehoon Lee, Sanghoon Ha, Kyungwon Suh, Hyuntae Jung, Narayanan Selvapalam, Jaeyoon Kim, Sung Ho Ryu, Kimoon Kim, ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY, **2009**, *238*, 737-737, BIOL-036, Publisher: American Chemical Society.

9. Dehydrative intramolecular nitrone cycloaddition in confined aqueous media: a green chemical route to *cis*-fused chromano[4,3-*c*]isoxazoles; Chatterjee, A.; Hota, S. K.; **Banerjee, M.**; Bhattacharya, P. *Tetrahedron Lett.,* **2010**, *51*, 6700-6703 (current impact factor: 2.1).
10. Supramolecular fishing for plasma membrane proteins using an ultrastable synthetic host-guest binding pair; Lee, D.-W.; Park, K. M.; **Banerjee, M**.; Ha, S. H.; Lee, T.; Suh, K.; Paul, S.; Jung, H.; Kim, J.; Selvapalam, N. Ryu, S. H.; Kim, K. *Nature Chemistry*, **2011**, ***3***, 154–159 (current impact factor: 24.2).
11. A Reaction Based Turn-On Type Fluorigenic and Chromogenic Probe for the Detection of Trace Amount of Nitrite in Water; Kumar, V.; **Banerjee, M.**; and Chatterjee, A. *Talanta,* **2012**, *99*, 610-615 (current impact factor: 6.5).
12. An aggregation-induced emission based "turn-on" fluorescent chemodosimeter for the selective detection of ascorbate ions Dipratn G. Khandare, Vikash Kumar, Anjan Chattopadhyay, **Mainak Banerjee*** and Amrita Chatterjee*, *RSC Adv.* **2013**, 3, 16981 – 16985 (current impact factor: 4.1).
13. DBSA Mediated Chemoselective Synthesis of 2-Sbustituted Benzimidazoles in Aqueous Media, Vikash Kumar, Dipratn G. Khandare, Amrita Chatterjee* and **Mainak Banerjee***, *Tetrahedron Lett.* 54 (**2013**) 5505–5509 (current impact factor: 2.1).
14. A PEGylated-Rhodamine based sensor for "turn-on" fluorimetric and colorimetric detection of Hg^{2+} ions in aqueous media Subhenjit Hazra, Shruti Balaji, **Mainak Banerjee**, Anasuya Ganguly, Narendra Nath Ghosh and Amrita Chatterjee,* *Analytical Methods*, **2014**, *6*, 3784–3790 (current impact factor: 3.5).
15. D-Glucose Derived Novel Gemini surfactants: Synthesis and Study of Their Surface Properties, DNA Binding, and Cytotoxicity, Vikash Kumar, Amrita Chatterjee, Nupur Kumar, Anasuya Ganguly, Indranil Chakraborty and **Mainak Banerjee**,* *Carbhydrate Research,* **2014**, 397, 37–45 (current impact factor: 3.0).
16. Construction and screening of 2-aryl benzimidazole library identifies a new antifouling and antifungal agent, Mahesh S. Majik,* Supriya Tilvi, Stacey Mascarenhas, Vikash Kumar, Amrita Chatterjee and **Mainak Banerjee**,* *RSC Adv*., **2014**, 4, 28259–28264 (current impact factor: 4.1).
17. A simple and efficient mechanochemical route for the synthesis of 2-aryl benzothiazoles and substituted benzimidazoles, **Mainak Banerjee,*** Amrita Chatterjee,* Vikash Kumar, Zigmee T. Bhutia, Dipratn G. Khandare, Mahesh S. Majik and Biswajit Gopal Roy, *RSC Adv*., **2014**, 4, 39606-39611 (current impact factor: 4.1).
18. An aggregation-induced emission based "turn-on" fluorescent chemodosimeter for the selective detection of Pb^{2+} ions, Dipratn G. Khandare, Hrishikesh Joshi, **Mainak Banerjee,*** Mahesh S. Majik and Amrita Chatterjee,* *RSC Adv*., **2014**, 4, 47076-47080 (current impact factor: 4.1).
19. Biodegradation of aliphatic hydrocarbons in the presence of hydroxylcucurbit[6]uril, Rajesh Pasumarthi, Vikash Kumar, Sivaraman Chandrasekharan, Anasuya Ganguly, **Mainak Banerjee**, Srikanth Mutnuri, *Mar. Pollut. Bull.,* **2014**, 88, 148-154 (current impact factor: 7.1).
20. Production of superoxide from Photosystem II in a rice (Oryza sativa L.) mutant lacking PsbS, Stefan Jansson, Choon-Hwan Lee, Ismayil S Zulfugarov, Altanzaya Tovuu, Young-Jae Eu, Bolormaa Dogsom, Roshan Sharma Poudyal, Krishna Nath, Michael Hall, **Mainak Banerjee**, Ung Chan Yoon, Yong-Hwan Moon, Gynheung An, *BMC Plant Biology,* **2014,** 14, 242/1-242/15 (current impact factor: 4.2).
21. Amine functionalized tetraphenylethylene: A novel aggregation–induced emission based fluorescent chemodosimeter for nitrite and nitrate ions, Amrita Chatterjee,* Dipratn G. Khandare,

Praveen Saini, Anjan Chattopadhyay, Mahesh S. Majik and **Mainak Banerjee,*** *RSC Advances*, **2015**, 5, 31479-31484 (current impact factor: 4.1).

22. A mild and efficient route to 3-vinylchromones in aqueous micellar media, Vikash Kumar, Amrita Chatterjee* and Mainak Banerjee*, *Synth. Commun.*, **2015**, 45, 2364-2377 (current impact factor: 2.0).
23. Fluorescence Turn-on Chemosensor for the Detection of Dissolved CO2 Based on Ion-Induced Aggregation of Tetraphenylethylene derivative, Dipratn G. Khandare Hrishikesh Joshi, Mainak Banerjee*, Mahesh S. Majik and Amrita Chatterjee* *Analytical Chemistry*, **2015**, 87, 10871–10877 (current impact factor: 8.0).
24. In situ mechanochemical synthesis of nitrones followed by 1,3-dipolar cycloaddition: a catalyst-free, "green" route to cis-fused chromano[4,3-c]Isoxazoles; Zigmee T. Bhutia, Geethika P., Anurag Malik, Vikash Kumar, Amrita Chatterjee,* Biswajit Gopal Roy and **Mainak Banerjee***, *RSC Adv.*, **2015**, 5, 99566–99572 (current impact factor: 4.1).
25. A Computational Investigation of the Photochemical Reaction Path of some Synthesized and Experimentally Analyzed Small-Chain Conjugated Nitrones, Praveen Saini, **Mainak Banerjee**, Anjan Chattopadhyay, *J. Phys. Chem. A*, **2016**, 120 (3), pp 396–406 (current impact factor: 2.9).
26. Green synthesis of a benzothiazole based 'turn-on' type fluorimetric probe and its use for the selective detection of thiophenols in environmental samples and living cells, Dipratn G. Khandare, **Mainak Banerjee**,* Rishabh Gupta, Nupur Kumar, Anasuya Ganguly, Deepak Singh and Amrita Chatterjee* *RSC Adv*., 2016, **6**, 52790–52797 (current impact factor: 4.1).
27. A Facile, Catalyst-Free Mechano-Synthesis of Quinoxalines and their In-Vitro Antibacterial Activity Study, Zigmee T. Bhutia, Geethika Prasannakumar, Avijit Das, Malabika Biswas, Amrita Chatterjee,* and **Mainak Banerjee***, *ChemistrySelect*, 2017, **2**, 1183– 1187 (current impact factor: 2.1).
28. Synthesis of novel d-glucose based anionic bolaamphiphiles and their catalytic application in 1,3-dipolar nitrone cycloaddition reactions, Vikash Kumar, Amrita Chatterjee,* Biswajit Gopal Roy and **Mainak Banerjee***, *Catalysis* Communications, 2017, **94**, 77–81 (current impact factor: 3.5).
29. Aggregation-Induced Emission-Based Chemodosimeter Approach for Selective Sensing and Imaging of Hg(II) and Methylmercury Species, Amrita Chatterjee*, **Mainak Banerjee***, Dipratn G. Khandare†, Ram U. Gawas, Starlaine C. Mascarenhas, Anasuya Ganguly, Rishabh Gupta, and Hrishikesh Joshi, *Anal. Chem.* 2017, 89, 12698–12704 (current impact factor: 8.0).
30. Mechanochemical synthesis of 7-oxa-4-thia-1-azabicyclo[3.2.1]octane-4,4-dioxides via tandem Michael addition-1,3-dipolar cycloaddition of aldoximes and evaluation of their antibacterial activities, Zigmee T. Bhutia, Avijit Das, Malabika Biswas, Amrita Chatterjee* and **Mainak Banerjee***, *Eur. J. Org. Chem. 2018, 506–514* (current impact factor: 3.2).
31. Sulfonate-functionalized tetraphenylethylenes for selective detection and wash-free imaging of Gram-positive bacteria (*Staphylococcus aureus*), Viraj G. Naik, Sharanabasava D. Hiremath, Avijit Das, Dishant Banwari, Ram U. Gawas, Malabika Biswas, **Mainak Banerjee** and Amrita Chatterjee, *Mater. Chem. Front.*, **2018**, 2, 2091-2097 (current impact factor: 8.7).
32. Development of a Water-Dispersible SBA-15-Benzothiazole-Derived Fluorescence Nanosensor by Physisorption and Its Use in Organic-Solvent-Free Detection of Perborate and Hydrazine, R. U. Gawas, S. Anand, B. K. Ghosh, P. Shivbhagwan, K. Choudhary, N. N. Ghosh, **M. Banerjee**, A. Chatterjee, *ChemistrySelect*, 3 (38), 10585-10592 (current impact factor: 2.1).
33. Water-Dispersible Rhodamine B Hydrazide Loaded TiO_2 Nanoparticles for "Turn On" Fluorimetric Detection and Imaging of Orthosilicic Acid Accumulation *In-Vitro* in Nephrotoxic Kidney Cells,

Mascarenhas, Starlaine C; Gawas, Ram U; Ghosh, Barun Kumar; **Banerjee, Mainak**; Ganguly, Anasuya; Chatterjee, Amrita; Ghosh, Narendra Nath, *Journal of nanoscience and* nanotechnology, 2018, 18 (12), 8142-8154 (current impact factor: 2.0).

34. A water soluble AIE-gen for organic-solvent-free detection and wash-free imaging of Al3+ ions and subsequent sensing of F^- ions and DNA tracking, Sharanabasava D. Hiremath, Ram U. Gawas, Starlaine C. Mascarenhas, Anasuya Ganguly, **Mainak Banerjee***, Amrita Chatterjee*, *New J. Chem.*, 2019, **43**, 5219-5227 (current impact factor: 3.9).
35. Efficient and "Green" Synthetic Route to Imidazo[1,2-a]pyridine by Cu(II)−Ascorbate-Catalyzed A3-Coupling in Aqueous Micellar Media; Zigmee T. Bhutia, Dharmendra Das, Amrita Chatterjee,* and **Mainak Banerjee***, ACS Omega 2019, 4, 4481−4490 (current impact factor: 4.2).
36. Vikash Kumar, Viraj G. Naik, Amrita Chatterjee and **Mainak Banerjee**; TPE-Based AIEActive Smart and Soft Materials for Sensing and Imaging Applications, 2019, International Journal of Material Science and Research, DOI: 10.18689/2638-1559.a3.002.
37. Amrita Chatterjee, Bhaskar Priyadarshi and **Mainak Banerjee**; Carbon- Based Platforms for Sensory Applications, 2019, International Journal of Material Science and Research, DOI: 10.18689/2638-1559.a3.002.
38. Synthesis of a series of ethylene glycol modified water-soluble tetrameric TPE-amphiphiles with pyridinium polar heads: Towards applications as light-up bioprobes in protein and DNA assay, and wash-free imaging of bacteria Vikash Kumar, Viraj G Naik, Avijit Das, Sourayan Basu Bal, Malabika Biswas, Nupur Kumar, Anasuya Ganguly, Amrita Chatterjee,* **Mainak Banerjee*** Tetrahedron, 2019, 75, 3722-3732 (current impact factor: 2.4).
39. Mechanochemical Pd(II)-Catalyzed Direct and C2-Selective Arylation of Indoles, Dharmendra Das, Zigmee T. Bhutia, Amrita Chatterjee and **Mainak Banerjee*,** J. Org. Chem., 2019, 84, 10764-10774 (current impact factor: 4.2).
40. Reduced Graphene Oxide–Thioguanine Composites for the Selective Detection of Inorganic and Organic Mercury in Aqueous Media, SD Hiremath, KK Maiti, NN Ghosh, **M Banerjee**, A Chatterjee, ACS Applied Nano Materials, 2020, 3, 3071-3079 (current impact factor: 5.1).
41. Carbon dots-MnO2 based turn-on fluorescent probe for rapid and sensitive detection of hydrazine in water SD Hiremath, B Priyadarshi, **M Banerjee**, A Chatterjee, Journal of Photochemistry and Photobiology A: Chemistry, 2020, 389, 112258 (current impact factor: 5.1).
42. Iodine promoted efficient synthesis of 2-aryl*H*-imidazo[1,2-*a*]pyridines in aqueous media: a comparative study between micellar catalysis and "on water" platform, Zigmee T. Bhutia, Padmini C. Panjikar, Shruti Iyer, Amrita Chatterjee and **Mainak Banerjee**, *ACS Omega,* 2020, 5, 13333-13343 (current impact factor: 4.2).
43. A simple and efficient route to 2-arylimidazo [1, 2-a] pyridines and zolimidine using automated grindstone chemistry, D Das, ZT Bhutia, PC Panjikar, A Chatterjee, **M Banerjee***, *Journal of Heterocyclic Chemistry*, 2020, 57, 4099-4107 (current impact factor: 2.1).
44. Mn(I)-Catalyzed Mechanochemical C–H Bond Activation: C-2 Selective Alkenylation of Indoles, Dharmendra Das, Akhil A. Bhosle, Padmini C. Panjikar, Amrita Chatterjee*****, and **Mainak Banerjee***, *ACS Sustainable Chemistry and Engineering*, 2020, 8, 51, 19105-19116 (current impact factor: 9.2).
45. Solid Supported Amplification of Aggregation Emission: A Tetraphenylethylene-Cucurbit[6]uril@Hydroxyapatite Based Supramolecular Sensing Assembly for the Detection of Spermine and Spermidine in Human Urine and Blood." Naik, Viraj ; Kumar, Vikash; Bhasikuttan,

Achikanath; Kadu, Kavita; Ramanan, Sutapa; Bhosle, Akhil; **Banerjee, Mainak***; Chatterjee, Amrita*, *ACS Applied Bio Materials*, 2021, 4, 1813-1822, DOI: doi.org/10.1021/acsabm.0c01527.

46. Micellar nanoreactors for organic transformations with a focus on "dehydration" reactions in water: A decade update, **M Banerjee**,* PC Panjikar, ZT Bhutia, AA Bhosle, A Chatterjee,* *Tetrahedron*, 2021, 88, 132142 (current impact factor: 2.4).
47. Solvent-free mechanochemical synthesis of a novel benzothiazole-azine based ESIPT-coupled orange AIEgen for the selective recognition of Cu2+ ions in solution and solid phase, AA Bhosle, SD Hiremath, AC Bhasikuttan, **M Banerjee***, A Chatterjee*, *Journal of Photochemistry and Photobiology A: Chemistry* 413, 2021, 113265 (current impact factor: 5.1).
48. A redox-coupled carbon dots-MnO2 nanosheets based sensory platform for label-free and sensitive detection of E. coli, SD Hiremath, AA Bhosle, A Nayse, S Biswas, M Biswas, A. C. Bhasikuttan, **Mainak Banerjee***, Amrita Chatterjee*, *Sensors and Actuators B: Chemical* 2021, 339, 129918 (current impact factor: 9.2).
49. Mechanochemical Synthesis of Organic Dyes and Fluorophores, **M Banerjee***, AA Bhosle, A Chatterjee, S Saha, The Journal of Organic Chemistry, 2021, 86 (20), 13911-13923 (current impact factor: 4.2).
50. Sulphonate functionalized AIEgens: Strategic approach beyond water-solubility for sensing and imaging applications, A Thakuri, **M Banerjee***, A Chatterjee*, ChemPhotoChem, 2022, DOI: https://doi.org/10.1002/cptc.202100234. A review article, (current impact factor: 3.9).
51. "ESIPT-active hydroxybenzothiazole-picolinium@CB[7]-HAp NPs based su-pramolecular sensing assembly for spermine, spermidine and cadaverine: Ap-plication in monitoring cancer biomarkers and food spoilage", Akhil A. Bhosle, **Mainak Banerjee***, Nilotpal Barooah, Achikanath C.Bhasikuttan, Kavita Kadu, Sutapa Roy Ramanan, Amrita Chatterjee, Journal of Photochemistry & Photobiology, A:Chemistry, 2022, 426, 113770; DOI:https://doi.org/10.1016/j.jphotochem.2022.113770 (current impact factor: 5.1).
52. Grindstone chemistry: A "green" approach for the synthesis and derivatization of heterocycles, **Mainak Banerjee***, Padmini C. Panjikar, Dharmendra Das, Shruti Iyer, Akhil A. Bhosle, Amrita Chatterjee, Tetrahedron, 2022, 112, 132753, In-press, https://doi.org/10.1016/j.tet.2022.132753. A review article. [accepted as cover-page in April issue] (current impact factor: 2.4).
53. Microwave Assisted Rapid and Sustainable Synthesis of Unsymmetrical Azo Dyes by Coupling of Nitroarenes with Aniline Derivatives, Ankit Thakuri, **Mainak Banerjee**, and Amrita Chatterjee, iScience (Cell Press), 2022, 25, 104497. DOI: https://doi.org/10.1016/j.isci.2022.104497 (current impact factor: 5.7).
54. A coumarin coupled tetraphenylethylene based multi-targeted AIEgen for cyanide ion and nitro explosive detection, and cellular imaging, Viraj G Naik, Sharanabasava D Hiremath, Ankit Thakuri, Vijay Hemmadi, Malabika Biswas, **Mainak Banerjee**, Amrita Chatterjee, Analyst, 2022, 147, 2997-3006, DOI: https://doi.org/10.1039/D2AN00040G. (current impact factor: 5.2)
55. Polydiacetylene (PDA) Impregnated Poly(vinylidene fluoride) (PVDF) Membrane for Sensitive Detection of Fluoride Ions, Ankit Thakuri, Raghunath Acharya, **Mainak Banerjee,** and Amrita Chatterjee, Analyst, 2022, *147*, 3604-3611. DOI: https://doi.org/10.1039/D2AN00848C (current impact factor: 5.2)
56. Amplification of AIE-effect of tetraphenylethylene on solid support: Formation of a sensitive fluorescent nanosensor for turn-on detection of Cu2+ and successive sensing of ascorbate ions, Ram Uttam Gawas, Ankit

Thakuri, Raghunath Acharya, **Mainak Banerjee,** Amrita Chatterjee, Inorganica Chimica Acta, 2022, 121097, In Press. DOI: https://doi.org/10.1016/j.ica.2022.121097 (current impact factor: 3.1).

57. Automated Grindstone Chemistry: A Simple and Facile Way for PEG-assisted Stoichiometry-controlled Halogenation of Phenols and Anilines Using N-Halosuccinimide, Dharmendra Das, Akhil A. Bhosle, Amrita Chatterjee, **Mainak Banerjee**, *BJOC, 2022, 18, 999–1008. https://doi.org/10.3762/bjoc.18.100.* (current impact factor: 2.8)
58. Review of 2D MnO_2 nanosheets as FRET-Based Nanodot Fluorescence Quenchers in Chemosensing Applications, Sharanabasava D. Hiremath et al. *ACS Appl. Nano Mater.* 2022, 5, 12, 17373–17412 (current impact factor: 5.6).
59. A combination of a graphene quantum dots–cationic red dye donor–acceptor pair and cucurbit [7] uril as a supramolecular sensor for ultrasensitive detection of cancer biomarkers … AA Bhosle, M Banerjee, SD Hiremath, DS Sisodiya, VG Naik, N Barooah, Journal of Materials Chemistry B, 2022, 10 (40), 8258-8273 (impact factor 7.2).
60. Protocol for microwave-assisted synthesis of unsymmetrical azo dyes, A Thakuri, M Banerjee, A Chatterjee, STAR protocols, 2022, 3, 101864 (current impact factor: 1.4).
61. Mechanochemical synthesis of an AIE-TICT-ESIPT active orange-emissive chemodosimeter for selective detection of hydrogen peroxide in aqueous media and living cells, and solid …AA Bhosle, M Banerjee, V Gupta, S Ghosh, AC Bhasikuttan, A Chatterjee, New Journal of Chemistry 2022, 46, 18961-18972 (impact factor 3.9).
62. Microwave-assisted rapid synthesis of bicyclo aza-sulfone derivatives from aldehydes via aldoxime formation followed by Michael addition-1,3-dipolar cycloaddition with divinyl sulfone in one-pot, PC Panjikar, S Saha, A Chatterjee, M Banerjee*, Tetrahedron Letters, 2022, 111, 154209 **(**current impact factor: 2.1).
63. A new series of D1-A-D2 type ESIPT-TICT-AIE active orange-to-red emissive unsymmetrical azines: Their all-throughout mechanochemical synthesis and photophysical properties, Akhil A. Bhosle, Mainak Banerjee, Sharanabasava D. Hiremath, Achikanath C. Bhasikuttan, Amrita Chatterjee, Chem. -An Asian J., 2023, accepted article, DOI: http://dx.doi.org/10.1002/asia.202300048 (current impact factor: 4.9).
64. An NIR-emissive AIEgen with dual sensing ability: An azine-based chemodosimeter for discriminative ppb-level detection of hydrazine and bisulfite ions, AA Bhosle, M Banerjee, S Saha, S Garg, S Ghosh, A Chatterjee, Sensors and Actuators B: Chemical , 2023, 397, 134661, (current impact factor: 8.4)
65. Reagentless Chemistry "On-Water": An Atom-Efficient and "Green" Route to Cyclic and Acyclic β-Amino Sulfones via aza-Michael Addition Using Microwave Irradiation, Soumik Saha, Amrita Chatterjee, Mainak Banerjee, *J. Org. Chem.* 2023, 88, 21, 15358–15366 (current impact factor: 3.7).
66. Mechanochemical Duff Reaction in Solid Phase for Easy Access to Mono-and Di-formyl Electron-Rich Arenes, Soumik Saha, Akhil A Bhosle, Amrita Chatterjee, Mainak Banerjee, *J. Org. Chem.* 2023, 88, 14, 10002–10013 (current impact factor: 3.7).
67. Cationic Donor–Two-Acceptor Dye–Graphene Quantum Dot Nanoconjugate for the Ratiometric Detection of Bisulfite Ions and Monitoring of SO2 Levels in Heat-Stressed Cells, Hiremath, Sharanabasava D; Thakuri, Ankit; Joseph, Manu M; Bhosle, Akhil A; Maiti, Kaustabh Kumar; Banerjee, Mainak; Chatterjee, Amrita; ACS Applied Nano Materials 2023 6 11 9958-9967 (current impact factor: 5.6).

68. Aggregation-induced emission-active azines for chemosensing applications: A five-year update, Bhosle, Akhil A; Banerjee, Mainak; Chatterjee, Amrita; *Sens. Diagn.*, 2024, **3**, 745-782 (current impact factor: 3.5).
69. A carbon dots-MnO2 nanosheet-based turn-on pseudochemodosimeter as low-cost probe for selective detection of hazardous mercury ion contaminations in water, Ankit Thakuri, Akhil A Bhosle, Sharanabasava D Hiremath, Mainak Banerjee, Amrita Chatterjee; J. Hazard Mater, 2024 10 469 133998, (current impact factor: 12.2).
70. A Polydiacetylene (PDA) Based Dual-Mode Optical Sensor for the ppb Level Selective Detection of Biogenic Polyamines, Ankit Thakuri, Raghunath Acharya, Mainak Banerjee, Amrita Chatterjee; Sensors and Actuators B: Chemical 2024 135573, (current impact factor: 8.0).
71. Alendronate-Modified Polydiacetylene (PDA) Dual-Mode Sensor for the Selective Detection of Lead(II) Ions up to the nM Level in Solutions and Agarose Films, Ankit Thakuri, Raghunath Acharya, Mainak Banerjee, Amrita Chatterjee; ACS Appl. Polym. Mater. 2024 6 1 1023–1032, (current impact factor: 4.4).
72. Polydiacetylene Liposome-Based Dual-Output Optical Sensor for ppb Level Detection of Dopamine in Solution and Solid Phases; Ankit Thakuri, Mainak Banerjee and Amrita Chatterjee; Langmuir 2024, 40, 33, 17613–17621. (current impact factor: 3.7).
73. A Carbon Dots-Cobalt Oxyhydroxide-Based Dual Optical Nanosensor for ppb-Level Detection of Sulfide Ions and H2S in Aqueous Media and Alginate Beads; Amanda Ana Pinheiro, Ankit Thakuri, Sharanabasava D. Hiremath, Bhaben Sharmah, Prasenjit Manna, Mainak Banerjee*, Amrita Chatterjee*, ACS Appl. Nano Mater. 2024, 7, 16, 19184–19193. (current impact factor: 5.6).
74. A solvent-free mechanochemical electrophilic C–H thiocyanation of indoles and imidazo[1,2-*a*]pyridines using a cost-effective combination of *N*-chlorosuccinimide-NaSCN and tandem C–C and C–S bond formation, Soumik Saha [a], Abigail B. Pinheiro [a], Amrita Chatterjee*[a], Zigmee T. Bhutia [b] and Mainak Banerjee, *Green Chem.*, 2024, **26**, 5879-5889, (current impact factor: 9.3).

Patents:

1. Chiral metal-organic porous material as asymmetric synthesis catalyst, and method for the preparation thereof**,** Kim, Gi Mun; Yoon, Min Yeong; Das, Sunirban; **Banerjee, Mainak**; Korean Patent; KR 2011041935 A 20110422; Assignee: POSTECH, Academy-Industry Foundation, S. Korea, Repub. Korean Kongkae Taeho Kongbo (2011)
2. Method of separating and purifying cellular components using non-covalent bond between cucurbituril derivative and guest compound and apparatus using the same; US patent, US9073972 B2, 2015, Inventors: Ki Moon Kim, Don Wook Lee, Sung Ho Ryu, Sang Hoon Ha, Hyun Tae Jung, **Banerjee Mainak**, Narayanan Selvapalam, Kyeng Min Park.
3. Mechanochemical method for synthesis of an ortho-hydroxy isophthalaldehyde, Prof. Banerjee Mainak, Prof. Chatterjee Amrita, Saha Soumik (Application number 202311039695) Indian Patent, RQ Filed, Date: 2023/06/09.
4. A combination of fluorescent dots-2D nanomaterial Förster resonance energy transfer (FRET) conjugate and masked quinol as a pseudochemodosimeter for turn-on fluorimetric sensing and thereof. Prof. Chatterjee Amrita, Prof. Banerjee Mainak, Thakuri Ankit. (Application number 202411006180) Filed, dated 30 January 2024.

International and National Conference Presentations/Talks (selected):

1. Solid-Phase Organic Mechanochemistry: How Effective and Sustainable? International Conference on "Asian Network for Natural and Unnatural Materials (ANNUM-XII)," at IIT Bombay during 20-22 July 2024.
2. Red-emissive AIE-active Unsymmetrical Azine-based Fluorophores for Chemosensing Applications; 17th Biennial Trombay Symposium on Radiation & Photochemistry (TSRP-2024), January 7-11, 2024, Mumbai, INDIA.
3. Organic Mechanochemistry: Accessing the *Greenerity* and *Sustainability* Aspects with a Focus on C-H activation. In ICOC-III, which will be held from 30th October 2nd November, -2023 at the 'The Zuri White Sands, Goa, India.
4. 'International Conference on Recent Advances on Green and Sustainable Developments (ICRAGSD 2023)', Department of Chemistry, Akal University, Talwandi Sabo, Bathinda, Punjab, India 6-8th September 2023. Title: Organic Mechanochemistry in Solid Phase: How Similar or Dissimilar it can be from Conventional Media.
5. All-throughout Mechanochemistry for Multi-step Synthesis of Dyes and Fluorophores,

   The 10th *International Conference on Mechanochemistry and Mechanical Alloying 2022* (*INCOME2022*) will be held from Monday 6 to Friday 10 June 2022 in Cagliari (Sardinia, Italy).
6. Scope of Mechanochemistry in Construction and Derivatization of Heterocycles: From Simple Cyclocondensation to C-H Bond Activation using 1st Row Transitional Metals, International Conference on Recent Developments in chemistRy (RDc-2021) March 3-5, 2021.
7. Mechanochemical Synthesis and Derivatization of Heterocycles, ICOC2020. (ICOC 2020), 7-10 March, 2020 Hotel Holiday Inn, Goa.
8. Mechanochemical C-H Bond Activation of Heterocycles: To Explore the Scope for 1st Row Transitional Metals, Dharmendra Das, Amrita Chaterjee and Mainak Banerjee*, (ICOC 2020), 7-10 March, 2020 Hotel Holiday Inn, Goa.
9. Das, D.; Bhutia, Z. T.; Chatterjee, A.; Banerjee, M.* "Mechanochemical C-2 Alkenylation of Indole via C-H Bond Activation". Presented in "New Frontiers In Chemistry – From Fundamentals To Applications-III" (NFCFA 2019) organized by Department of Chemistry, Birla Institute of Technology and Science, Pilani- K. K. Birla Goa Campus, December 20-22, 2019, Goa.
10. SYNTHESIS OF AIE ACTIVE NIR FLUORESCENT PROBES - THEIR PHOTOPHYSICAL STUDIES AND POTENTIAL APPLICATIONS IN IMAGING AND SENSING, Akhil A. Bhosle, Sharanabasava D. Hiremath, Amrita Chatterjee* and Mainak Banerjee*, 15th DAE-BRNS Biennial Trombay Symposium on Radiation & Photochemistry (TSRP-2020), Jan 5 - Jan 9, 2020, BARC, Mumbai.
11. Design and synthesis of graphene oxide based AIE-sensor for selective detection of Hg(II) in aqueous medium. Sharan Hiremath, **Mainak Banerjee** and Amrita Chatterjee, 14th DAE-BRNS Biennial Trombay Symposium on Radiation & Photochemistry (TSRP-2018), Jan 3 - Jan 7, 2018, BARC, Mumbai.
12. A reduced graphene oxide based "turn-on" fluorescent assay for selective detection of Hg(II) in aqueous medium, Sharan Hiremath, **Mainak Banerjee** and Amrita Chatterjee, DAE - BRNS Eighth Biennial

Symposium on Emerging Trends in Separation Science and Technology (SESTEC-2018) , 23-26 May, 2018 Department of Chemistry, BITS-Pilani KK Birla Goa Campus.

13. Mechanochemistry: A Greener way to Heterocyclic Scafolds, Zigmee T. Bhutia, Dharmendra Das, Amrita Chaterjee and **Mainak Banerjee***, International Conference on Organometallics and Catalysis (ICOC 2018), 13-16 December, 2018 Hotel Holiday Inn, Goa
14. Water Soluble Tetraphenylethenes: an Aggregation Induced Emission (AIE) active auto-fluorescent probe for detection and imaging, Vikash Kumar, Viraj Naik, Amrita Chatterjee, and **Mainak Banerjee**, *International Conference on* NANO- AND FUNCTIONAL MATERIALS: *Interface between Science & Engineering* (NFM-2017) 16 – 18 November 2017, Pilani, Rajasthan.
15. Water Soluble Cationic Tetraphenylethene**:** an Aggregation Induced Emission (AIE) active auto-fluorescent probe for the selective detection of *E. coli*, Vikash Kumar, Amrita Chatterjee, and **Mainak Banerjee***, 9th International Conference on Materials for Advanced Technologies" (ICMAT2017), 18th-23rd, June 2017, Santec, Singapore.
16. A facile hand-grinding route for the synthesis of 8-Aryl-7-oxa-4-thia-1-aza-bicyclo[3.2.1]octane 4,4-dioxides via nitrone formation followed by dipolar cycloaddition, Zigmee T. Bhutia, Amrita Chatterjee and **Mainak Banerjee***, 21st CRSI National Symposium in chemistry CRSI NSC-21, July 14-16, 2017, IICT, Hyderabad.
17. Zigmee T. Bhutia, Amrita Chatterjee and **Mainak Banerjee**, "C-H bond activation in aqueous micellar media: Alkylation of 3-position of indole using L-Proline" in NFCFA2017, Chemistry BITS Pilani K K Birla Goa Campus on 28-29 February 2017.
18. Zigmee T. Bhutia, Amrita Chatterjee and **Mainak Banerjee**, Mechanosynthesis of 8-Aryl-7-oxa-4-thia-1-aza-bicyclo[3.2.1]octane 4,4-dioxides via aldoxime formation followed by nitronecycloaddition, Symposium on Recent Advancements in Chemical Sciences and RSC Research Scholar Meet-2016, BITS PILANI, K K BIRLA, GOA CAMPUS, 13th November, 2016.
19. Zigmee T. Bhutia, Amrita Chatterjee and **Mainak Banerjee***, **A facile** hand-grinding route for the synthesis of 8-Aryl-7-oxa-4-thia-1-aza-bicyclo[3.2.1]octane 4,4-dioxides **via nitrone formation approach for the construction of *Heterocyclic* scaffolds** in Emerging Trends in Agroscience Chemistry and Technology, organized by Syngenta Biosciences Pvt. Ltd., Goa Nov. 22-23, 2016.
20. "Mechanochemistry"—A facile approach for the construction of *Heterocyclic* scaffolds, **Mainak Banerjee**, National conference on Organic Chemistry in Sustainable Developments: Recent Advances and Future Challenges (OCSD 2016), August 29-30, 2016, BITS Pilani, Rajasthan.
21. Grinding in a mortar-pestle: A simple, eco-friendly and versatile route for the synthesis of *Heterocycles,* Zigmee T. Bhutia, Amrita Chatterjee and **Mainak Banerjee**, NFCFA2015, BITS Pilani KK Birla Goa Campus, Goa, Dec. 18-19, 2015.
22. Talk on "Dissertation for Chemistry Students" at Department of Pharmaceutical Chemistry, D. M. College, Goa University, Goa.
23. "Green and sustainable methods for the formation of pharmacologically important heterocyclic systems", **Mainak Banerjee***, at Association of Chemistry Teacher's annual convention at Chowgule College, Goa University, Goa , 25-02-15.
24. Green and sustainable methods for the formation of pharmaceutically important heterocycles, Mainak Banerjee, 13th Annual Convention, The association of chemistry teachers, Goa, Feb. 25th, 2015.
25. Grinding in a mortar-pestle: A simple and eco-friendly route for the synthesis of cis-fused chromano[4,3-c]isoxazoles via intramolecular nitrone cycloaddition, Zigmee T. Bhutia, Anurag Malik,

Geethika P., Amrita Chatterjee* and **Mainak Banerjee***, 17th CRSI National Symposium in chemistry (NSC 17), Feb. 5-8, 2015, NCL Pune.

26. Grinding in a mortar-pestle: A simple, eco-friendly and versatile route for the synthesis of *Heterocycles*, Zigmee T. Bhutia, Amrita Chatterjee* and **Mainak Banerjee***, International Conference on Green Chemistry, Catalysis, Energy & Environment, **ICGC 2015**, Jan. 22-24, Goa University, Goa.
27. D-Glucose Derived Novel Gemini Surfactants: Synthesis and Study of Their Surface Properties, DNA Binding, and Cytotoxicity, Vikash Kumar, Amrita Chatterjee and **Mainak Banerjee**, International Conference on Challenges in Chemistry and Biology of Carbohydrates, **CARBOXXVIII**, Feb. 23-25, 2014 at FRI, Dehradun.
28. A simple and efficient mechanochemical route for the syntheses of 2-aryl benzothiazoles and substituted benzimidazoles, Dipratn Khandere, Vikash Kumar, Amrita Chatterjee* and **Mainak Banerjee**, 16th CRSI National Symposium in chemistry (NSC-16), Mar. 6-9, 2014, IIT Bombay.
29. DBSA catalized "Green" Synthesis of Benzimidazole Derivatives in Aqueous Media, Vikash Kumar, Amrita Chatterjee and **Mainak Banerjee,** International Conference on New Emerging Trends in Chemistry, IIS University, Jaipur, 3-4 March, 2013.
30. Sugar Based Bolaamphiphiles: From Morphological Studies to Catalytic Applications, Kumar, V.; **Banerjee, M.**; and Chatterjee, A. **ICGTCS-2012**, Mar 03-04, 2012 in Udaipur (organized by Asian Journal of Chemistry).
31. Development of efficient synthetic methodologies for Uncommon 4a-Methyl Hydrofluorene Abietane Diterpenoids, **Mainak Banerjee** & Asish Kumar Banerjee, First J-NOST Symposium, National Organic Symposium Trust, Nov. 8-10, 2004, NCL, Pune, India.

Details of visiting assignments in reputed industries/universities:

a) Visited Turin University (under Prof. Cravotto) Turin, Italy during May to July (short stay for research).

b) Visited University of Rouen Normandy (COBRA Lab) Rouen, France during Feb. to March, 2023 (scientific visit, talks).

c) Visited various industries as consultants.

Conference organized:

Organized a national conference "New Frontiers in Chemistry – from Fundamentals to Applications" (NFCFA) as convener for three times, 2015, 2017, 2019. Conducted SESTEC2018 as co-convener in 2018. Conducted ICAIEFA2022 as chair. Conducted NSRP2023 as convener. 89th IAS meet as convener.

Collaborations: NCL Pune, NIO Goa, Goa University, Sikkim University, NIIST Thiruvananthapuram; BARC, Mumbai; IICB, Kolkata; IIT, Jodhpur; UNICHEM, Goa; Godrej-ASTEC; Syngenta Bioscience Pvt. Ltd. Goa.

Awards, Honours, Recognitions:

1. Received Research Excellence Award in Basic Science, a BITS Goa,
2. Recipient of BK 21 fellowship of Korea Government for Postdoctoral studies, 2006-2007.

3. Recipient of DST Fast-Track sponsorship for young scientists.
4. Recipient of UGC-JRF, CSIR-JRF and CSIR-SRF for doctoral studies.
5. Qualified GATE, 1998.
6. CSIR travel grant for Singapore visit to attend ICMAT2017.
7. I am featured in the "League of Extra Ordinary Chemists" in the newsletter of the Tokyo Chemical Industries (TCI) (India) Pvt. Ltd. Volume 13.

Administrative Experience:

2009-till date	Nucleus Member, Instruction and ARC Division	BITS, Pilani - K.K. Birla Goa. Campus, Goa
2013-2021	Warden of AH-9 (previously AH3 and CH3)	BITS, Pilani - K. K. Birla Goa Campus, Goa.
2014-2016, 2022-2024	Nucleus member of Departmental Research Council.	
2017-2019	Convener of Departmental Research Council	
2016-2021	Member of Departmental Committee on Academics	
2024-onwards	Member of Students Faculty Council	
2016-till date	Senate member of BITS Pilani University	
2016-till date	Member of Department Level Selection Committee	

Membership of Professional Societies:

Member of Royal Society of Chemistry (MRSC). [membership no. 574182]

Member of American Chemical Society. [membership no. 30064322]

Life member of Indian Association of Cultivation of Sciences.

Life member of Chemical Research Society, India. (life member, LM1610)

Life member of Association of Carbohydrate Chemists and Technologists, India (ACCTI) [LM/234/2014].
Life member of Indian Society for Radiation and Photochemical Sciences, India (ISRAPS, No. 522).
Life member of Association of Separation Scientists and Technologists (ASSET)

Life member of Indian Photobiology Society

Editorial board member of the following international journals: 1) Frontiers in Chemistry (from 2019); 2) General Chemistry (from 2019); 3) Oriental Journal of Chemistry (from 2016); 4) Transstellar Journal Publications and Research Consultancy Private Limited (TJPRC, from 2015).

Associate Editor of Frontiers in Chemistry (from 2022).

Ongoing/completed Projects:

- DST Fast Track Project for Young Scientists for the project "Redox-sensitive Vesicles of Cucurbit[7]urils as an Efficient Targeted Intracellular Drug Delivery Vehicle" (SR/FT/CS 023/2010, completed). Worth Rs. 24.15 lakhs as PI.
- CSIR project "Synthesis of Metal-Organic-Porous-Material Based Efficient Chiral Heterogeneous Catalysts by Post-Synthetic Modification and Their Applications in Asymmetric Reactions" (project no. 02(0075)/12/EMR-II), worth 23 lakhs as PI (Co-I Dr. Rahul Banerjee of NCL Pune, completed)
- CSIR project "Spectroscopic investigation of the properties of low-lying electronic states of some chemopreventive retinylnitrones and their comparison with retinyliminium ions" (project no. 01(2681)/12/EMR-II) worth 14 lakhs, as co-investigator (PI Dr. Anjan Chattopadhyay, completed).
- CSIR project "Preparation of Magnetically Separable, Mesoporous TiO_2 Catalysts and Study of their Catalytic Properties" (project no. 02(147)/13/EMR-II), worth 16 lakhs as co-investigator (PI: Dr. Narendra Nath Ghosh)
- Kurade Agro funded industrial project "Isolation of Natural Products from Kokum", as PI, Worth 2.5 lakhs, from 1/6/14-31/12/14 (completed).
- DST-SERB project "A comprehensive study on mechanochemical sp^2 C-H bond activation in five-membered heteroaromatics in a Ball-Mill" (Project no. EMR/2016/002253), 32 lakhs, completed.
- UNICHEM Laboratories Ltd. funded consultancy project 05/17 to 08/17, 5.52, completed.
- Design and synthesis of smart supramolecular dyes based on TPE modified PDI–cucurbituril conjugates: their binding and photophysical studies, BRNS, 28 lakhs, 2018-2021, completed.
- Development of Photocatalyst embedded Graphene based membranes for Treatment of Dye containing waste water under sunlight. Funding Agency: The Aditya Birla Science and Technology Company Private Limited and BITS Pilani; Amount: Rs 53 lakhs; Name of Principal Investigator: Dr. N N Ghosh; Role-team member; Status: completed, 2021.
- *Godrej ASTEC sponsored consultancy project, started in March-December 2021.*
- BASF project on "synthesis of aza-sulphone derivatives", 2021-2022, ongoing.
- UGC-DAE project on Favipiravir synthesis, March, 2022, ongoing.
- DBT-Builder project, November, 2022, ongoing.

Courses taught:

- Organic Chemistry I (CHEM F212)
- Organic Chemistry IV (CHEM F342)
- Chemical Experimentation I (CHEM F242)
- Green Chemistry and Catalysis (CHEM F337)
- Supramolecular Chemistry (CHEM F328)
- Chemistry of Organic Compounds (CHEM C232)
- General Chemistry (CHEM F111)
- Chemistry I (CHEM C141)
- Chemistry II (CHEM C142)
- Synthetic Organic Chemistry (CHEM C332)
- Chemistry Laboratory (CHEM F110)

- Measurement Techniques 1 (TA 211)
- Study Oriented Project (BITS C323)
- Heterocyclic Chemistry (CHEM G561)
- Catalysis (CHEM G556)
- Advanced Instrumentation Techniques (BITS G654)

List of PhD students Advised:

Past Members

1. Vikash Kumar, SRF-CSIR, worked on Tailor-made synthesis of amphiphilic molecules and their applications. (awarded)
2. Zigmee T. Bhutia, JRF, DST-inspire fellow, is working on the development of catalyst free mechanochemical methods for bioactive molecules. (awarded)
3. Dharmendra Das, JRF, DST-SERB, working on the development of C-H bond activation methods in Ball-Mills, (awarded).
4. Akhil Bhosle, JRF, BRNS project, 37(2)/14/20/2017-BRNS/37217, working on new AIE-active dyes and their mechanochemical synthesis, (awarded).
5. Viraj Naik, SRF, under UGC fellowship, (co-guide) [awarded].
6. Shubhra Sharma, SRF-CSIR (project), she worked for six months under my supervision on development of heterogeneous catalysts for asymmetric synthesis.
7. Sohini Sinha, JRF, DST-SERB, she worked for eight months under my supervision on the development of C-H bond activation methods in Ball-Mills, 2016-2017.
8. Raju Sen, JRF, BRNS project (worked for 6 months).
9. Ishita Yellapurkar, worked as project fellow in ASTEC project.

Present Members

10. Panjikar Padmini Charudatta, part-time fellow, *ongoing*
11. Chetan Joshi, Aspirant fellow, *ongoing.*
12. Soumik Saha, SRF, Institute Fellow, working on Organic Mechanosynthesis, *ongoing*.
13. Abigail Pinhero, JRF, DBT Builder project, *ongoing*.
14. Abboy Chatterjee, JRF, CDRF project, *ongoing*.
15. Shravya. B, JRF, Institute Fellow, *ongoing*.
16. Kedar Raghunath Khaparkhuntikar, JRF, in BITS-RMIT PhD program, *ongoing.*

List of Post-doc / RA/:

1. Dr. Booma Devi Janaki Nadar, Research Associate in a CSIR project, worked on development of catalyst- and solvent-free reactions.
2. Dr. Abhijeet Patki, Shivaji UniverRenapur Maharashtra. (under IASc-INSA-NASI Summer Research Fellowship)

List of MS students Advised: 1. Geethika P.; 2. Anurag Malik; 3. Appurv Gupta; 4. Vipul Goyal;

5. Sourayan Basu Bal; 6. Kumar Manas; 7. Sahil Tapiawala, 8. Shruti. 9. Ronak Bhaskar. 10. Ankit Shirwaiker (DM's college, Goa). 11. Shaurya, IIT Indoor.

Institutional/departmental contributions (selected key contributions):

- Contributed to the regular divisional work of AUGSD (previously Instruction Division) since 2009.
- Contributed to regular departmental activities.
- Actively participated in the curriculum redesigning programme. Developed course materials of several organic courses including Organic Chemistry I (CHEM F212), Organic Chemistry IV (CHEM F342, Heterocyclic Chemistry (CHEM G561), Green Chemistry and Catalysis (CHEM F337), Supramolecular Chemistry (CHEM F328).
- Development of Laboratory Manual for two new laboratory courses viz. Chemistry Laboratory (CHEM F110) and Chemical Experimentation I (CHEM F242) as the First IC of the course.
- Practice School I (for two times) [i.e. mentor of a group of students during their first internship]
- As In-charge of faculty leaders during convocation, 2013.
- BITSAT duty as co-ordinator.
- Member of BITSAT analytics team.
- Member of certificate distribution team, convocation.

MAINAK BANERJEE