Dr Sabyasachi Chakrabortty

- **Associate Professor & HoD**, Department of Chemistry, SRM University-AP, Andhra Pradesh-522240, India.
- **Faculty Advisor, Energy Domain, Centre for Interdisciplinary Research (CIDR),** SRM University AP
- **Adjunct Faculty, Faculty of Climate Change and Sustainability, Asian Institute of Technology, Thailand**
- **Technical Mentor, Hydrogen Innovation Pte Ltd., Singapore**

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ORCHID ID - 0000-0002-2759-2208

Date of Birth: 10th May 1986
Marital Status: Married
Nationality: Indian
PhD Guided – 4 (Guiding - 6)
PostDoc – 4

Major Area of Research:
- Hybrid Nanocrystals Synthesis, Catalysis, Renewable Energy, Electrochemistry. Carbon Materials,
- Theranostic (Diagnostic + Therapy) nanomaterials

Professional Career

- **Associate Professor** (Jan 2023 - till): Department of Chemistry, SRM University – AP Andhra Pradesh, India.
- **Assistant Professor** (2017-Dec 2022): Department of Chemistry, SRM University – AP Andhra Pradesh, India.
- **Adjunct Faculty** (2025 - till)**, Department of Energy and Climate Change, Asian Institute of Technology** (top 250 QS)**, Thailand**
- **Adjunct Research Fellow** (2021-2023): **Ming Chi University of Technology, Taiwan**.
- **Group Leader** (2016-2019): **Max-Planck-Institute for Polymer Research, Germany**.
- Guest Scientist – (May-June 2019). Universität Ulm, Germany.
- Postdoctoral Fellow (2014-2017): Max-Planck-Institute for Polymer Research and Universität Ulm, Germany. (Advisor: Professor Tanja Weil)
- Postdoctoral Fellow (2012-2014): **National University of Singapore, Singapore**. (Advisor: Professor Chan Yin Thai)

Education

- **Ph.D.** (2012): **National University of Singapore, Singapore (top 10 QS Chemistry Department)**. (Advisor: Professor Chan Yin Thai)
  - JENESYS Exchange Research Program – Funded by **JSPS** (Feb-March 2009). Institute for Molecular Science, Okazaki, Japan. (Advisor: Professor Hidehiro Sakurai)
- M.Sc. (Chemistry) (2008): Indian Institute of Technology Madras, Chennai, India. (Thesis Advisor: Professor Dillip Kumar Chand). Cumulative Grade Point: 8.4 out of 10.
  - Summer Internship (May-June 2007). Hindustan Unilever Limited, Bengaluru, India. (Advisor: Dr Venkatraj V. Narayanan)
- B.Sc. (Chemistry) (2006): University of Calcutta, Kolkata, India. First Class Honours.

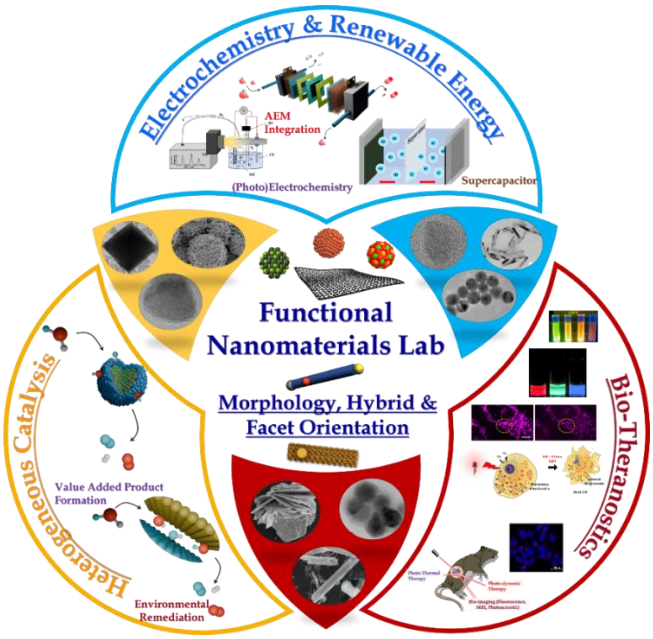
Achievements

- **Technical Consultant for Sustainable Energy** (Jan 2022 – to date)**, Hydrogen Energy and Fuel Cells,** Sunkonnect Pte Ltd, 1 Cleantech Loop. #02-26, Singapore 637141.
- **Technical Mentor** (March 2024 – to date), **Hydrogen Innovation Pte Ltd., Singapore.**
- **Outstanding Faculty Award – 2024 (across the whole University for Teaching, Research and Administrative contribution) -** SRM University – AP Andhra Pradesh, India**.**
- **Distinguished/ Young Scientists Award - Global Conference for Decarbonization of Energy and Materials (GCDEM-2024), Singapore.**
- **Adjunct Research Fellow –** (Jan 2021-Dec 2023) - Organic Electronics Research Center, Ming Chi University of Technology, New Taipei City, Taiwan.
- **Guest Scientist – (**May-June 2019**)**. Universität Ulm, Germany.
- **Best Graduate Researcher Award** (2012). **Department of Chemistry, National University of Singapore, Singapore.**
- **Kiang Ai Kim Award** (2010/2011). Most prestigious award for graduate researchers in NUS, Department of Chemistry.
- **Research Scholarship** (2008-2012). National University of Singapore, Singapore.
- **Institute Merit Scholarship for Outstanding Academic Performance** (2006-2008). Given to the top 5 students during M. Sc., Indian Institute of Technology Madras, India (**IITM**).
- Qualified the joint CSIR-UGC National Eligibility Test (**NET**) and selected as **CSIR scholarship**, India (2008).
- Qualified the Graduate Aptitude Test in Engineering (**GATE**) in India (2008), among top 1.4% students.
- **Reviewer**: ACS Nano, Advanced Materials Letter, Langmuir, Chemistry of Materials, Macromolecules, Journal of Alzheimer's Disease, Medical Oncology, Journal of Alloys and Compounds, Journal of Physical Chemistry C, Journal of Pharmaceutical Research, Polymers, Materials, Coatings.
- Attended teaching workshop (2010), National University of Singapore, Singapore.
- **Board-of-studies (BOS) member** JKC College Guntur for M.Sc. Curriculum.

***Research Credentials** – as on 12th February 2026 (google scholar)*

Total Number – **82**
Citations – 2821
h-index – **25**
i-10 index – 50
No. of **Patent - 9**; **Book Chapters: 5**

Research Theme:



Highlights -

- Journal Details –

Angew. Chem. Int. Ed. **– 1**; ***J. Am. Chem. Soc.*** **– 2**; *Appl. Phys. Lett.* – 1; ***Small*** **– 3**; *J. Phys. Chem. C* – 1; ***Chem. Mater.*** **– 4**; ***ACS Nano*** **– 3**; *Inorganica Chim. Acta* – 1; ***Nano Lett.*** **– 3**; *Analytical Chem.* – 1; ***Nanoscale*** **– 1**; *IEEE J. Sel. Top. Quantum Electron.* – 1; *Scientific Reports* – 3; ***Biomater. Sci.*** **- 2**; *J. Vis. Exp.* -1; *Glob. Challenges* – 1; *Sensors* – 1; *Progress in Natural Science: Materials International* – 1; *Journal of Electronic Materials* – 2; ***J. Mater. Chem. A*** **– 1**; *Sustainability* - 1; *Ceramics International* -1; *Advanced Photonics Research* -1; *Nanomaterials* -3; *Journal of Alloys and Compounds* – 1; ***Energy Conversion & Management*** **-1**; *RSC Advances* – 2; *ACS Omega* - 2; ***ACS Applied Materials & Interfaces*** **- 1**; *Microchimica Acta* -1; *Catalysts* -1; ***Sensors and Actuators B: Chemical*** **– 1**; *Journal of Materials Science* – 1; *Environmental Advances* – 1; *Results in Engineering* -1; *Journal of Polymers and the Environment* – 1; *Ionics* – 1; ***Renewable and Sustainable Energy Reviews*** **– 1**; ***Progress in Lipid Research*** **– 1**; *Memories - Materials, Devices, Circuits and Systems* – 1; *Inorganic Chemistry Communications* – 1; *Biomolecules* – 1; *Heliyon* - 1; ***Prog Addit Manuf*** - 1; ***ACS Applied Energy Materials*** – 3; ***Journal of Environmental Chemical Engineering*** – 1; *Organic Chemistry Frontiers* – 1; *Energy Technology* – 2; *Materials Science in Semiconductor Processing* – 1; *Langmuir* – 2; *Journal of Materials Science: Materials in Electronics* – 1; *Materials Science and Engineering: B* – 1; ***International Journal of Hydrogen Energy*** – 1; ***Materials Today Chemistry*** – 1; ***Catalysis Today*** – 1; *ChemNanoMat* – 2; Physics and Chemistry of the Earth, Parts A/B/C – 1; JOC – 1; ***Materials Chemistry and Physics*** – 1;

Number of publications after joining as independent faculty – **60**

- Research Career as Faculty – ~ **8 Years**
  – out of which, Assistant Professor as 5 Years and Associate Professor as ~ 3 years.

- PhD awarded – **2**; (PhD ongoing – 8; Postdoc – 4)

- External Funding received – **4** + Internal Funding (**1**)

Publications List

1) **Chakrabortty, S.**; Yang, J. A.; Tan, Y. M.; Mishra, N.; Chan, Y. Asymmetric Dumbbells from Selective Deposition of Metals on Seeded Semiconductor Nanorods. *Angew. Chem. Int. Ed*. **2010**, *49*, 2888–2892.
2) Wu, Y.; **Chakrabortty, S.**; Gropeanu, R. a; Wilhelmi, J.; Xu, Y.; Er, K. S.; Kuan, S. L.; Koynov, K.; Chan, Y.; Weil, T. pH-Responsive Quantum Dots via an Albumin-Polymer Surface Coating. *J. Am. Chem. Soc*. **2010**, *14*, 5012–5014.
3) Xing, G.; **Chakrabortty, S.**; Chou, K. L.; Mishra, N.; Huan, C. H. A.; Chan, Y.; Sum, T. C. Enhanced Tunability of the Multiphoton Absorption Cross-Section in Seeded CdSe/CdS Nanorod Heterostructures. *Appl. Phys. Lett.* **2010**, *97*, 8–11.
4) **Chakrabortty, S.**; Xing, G.; Xu, Y.; Ngiam, S. W.; Mishra, N.; Sum, T. C.; Chan, Y. Engineering Fluorescence in Au-Tipped, CdSe-Seeded CdS Nanoheterostructures. *Small* **2011**, *7*, 2847–2852.
5) Xing, G.; **Chakrabortty, S.**; Ngiam, S. W.; Chan, Y.; Sum, T. C. Three-Photon Absorption in Seeded CdSe/CdS Nanorod Heterostructures. *J. Phys. Chem. C* **2011**, *115*, 17711–17716.
6) Mishra, N.; Lian, J.; **Chakrabortty, S.**; Lin, M.; Chan, Y. Unusual Selectivity of Metal Deposition on Tapered Semiconductor Nanostructures. *Chem. Mater.* **2012**, *24*, 2040–2046.
7) Xing, G.; Liao, Y.; Wu, X.; **Chakrabortty, S.**; Liu, X.; Yeow, E. K. L.; Chan, Y.; Sum, T. C. Ultralow-Threshold Two-Photon Pumped Amplified Spontaneous Emission and Lasing from Seeded CdSe/CdS Nanorod Heterostructures. *ACS Nano* **2012**, *6*, 10835–10844.
8) Sahoo, H. S.; Tripathy, D.; **Chakrabortty, S.**; Bhat, S.; Kumbhar, A.; Chand, D. K. Self-Assembled Mononuclear palladium(II) Based Molecular Loops. *Inorganica Chim. Acta* **2013**, *400*, 42–50.
9) Wu, W.-Y.;† **Chakrabortty, S.**;† Chang, C. K. L.; Guchhait, A.; Lin, M.; Chan, Y. Promoting 2D Growth in Colloidal Transition Metal Sulfide Semiconductor Nanostructures via Halide Ions. *Chem. Mater*. **2014**, *26*, 6120–6126.
† equal contribution
10) Wong, J. I.; Mishra, N.; Xing, G.; Li, M.; **Chakrabortty, S.**; Sum, T. C.; Shi, Y.; Chan, Y.; Yang, H. Y. Dual Wavelength Electroluminescence from CdSe/CdS Tetrapods. *ACS Nano* **2014**, *8*, 2873–2879.
11) Dong, S.; Trivedi, D.; **Chakrabortty, S.**; Kobayashi, T.; Chan, Y.; Prezhdo, O. V.; Loh, Z. H. Observation of an Excitonic Quantum Coherence in CdSe Nanocrystals. *Nano Lett*. **2015**, *15*, 6875–6882.
12) Bi, X.; Adriani, G.; Xu, Y.; **Chakrabortty, S.**; Pastorin, G.; Ho, H. K.; Ang, W. H.; Chan, Y. Gene Detection in Complex Biological Media Using Semiconductor Nanorods within an Integrated Microfluidic Device. *Anal. Chem*. **2015**, *87*, 10292–10298.
13) Mishra, N.; Mukherjee, B.; Xing, G.; **Chakrabortty, S.**; Guchhait, A.; Lim, J.Y. Cation Exchange Synthesis of Uniform PbSe/PbS Core/Shell Tetrapods and their use as Near-Infrared Photodetectors. *Nanoscale*, **2016**, *8*, 14203–14212.
14) **Chakrabortty, S.**; Guchhait, A.; Ong, X.; Mishra, N.; Wu, W.-Y.; Jhon, M. H.; Chan, Y. Facet to Facet Linking of Shape Anisotropic Inorganic Nanocrystals with Site Specific and Stoichiometric Control. *Nano Lett.* **2016**, *16*, 6431–6436.
15) Liu, W.; Naydenov, B.; **Chakrabortty, S.**; Wuensch, B.; Hübner, K.; Ritz, S.; Cölfen, H.; Barth, H.; Koynov, K.; Qi, H.; Leiter, R.; Reuter, R.; Wrachtrup, J.; Boldt, F.; Scheuer, J.; Kaiser, U.; Sison, M.; Lasser, T.; Tinnefeld, P.; Jelezko, F.; Walther, P.; Wu, Y.; Weil, T. Fluorescent Nanodiamond–Gold Hybrid Particles for Multimodal Optical and Electron Microscopy Cellular Imaging. *Nano Lett.* **2016**, *16*, 6236–6244. (This work is highlighted in ***Nature News and Views*** *as Nature* **2016**, *539*, 505–506)
16) Heinz, D.; Huber, F.; Spiess, M.; Asad, M.; Wu, L.; Rettig, O.; Wu, D.; Neuschl, B.; Bauer, S.; Wu, Y.; **Chakrabortty, S.**; Hibst, N.; Strehle, S.; Weil, T.; Thonke, K.; Scholz, F. GaInN Quantum Wells as Optochemical Transducers for Chemical Sensors and Biosensors. *IEEE J. Sel. Top. Quantum Electron.* **2017**, *23*, 1900109 (1-9).
17) Wu, W.-Y.;† **Chakrabortty, S.**;† Guchhait, A.; † Wong, G. Y. Z.; Dalapati, G. K.; Lin, M.; Chan, Y. Solution-Processed 2D PbS Nanoplates with Residual Cu2S Exhibiting Low Resistivity and High Infrared Responsivity. *Chem. Mater*. **2016**, *28*, 9132-9138.
†equal contribution
18) Sison, M.; † **Chakrabortty, S.**; † Extermann, J.; Nahas, A.; Weil, T.; Lasser, T. Three-dimensional time lapse imaging of live cell mitochondria with photothermal optical lock-in optical coherence microscopy. *Scientific Reports*, **2017**, *7*, 43275.
†equal contribution
19) **Chakrabortty, S.**; Agrawalla, B. K.; Stumper, A.; Vegi, N. M.; Fischer, S.; Reichardt, C.; Kögler, M.; Dietzek, B.; Feuring-Buske, M.; Buske, C.; Rau, S.; Weil, T. Mitochondria Targeted Protein-Ruthenium Photosensitizer for Efficient Photodynamic Applications. *J. Am. Chem. Soc.*, **2017**, *139*, 2512-2519.
20) **Chakrabortty, S.**; Sison, M.; Wu, Y.; Ladenburger, A.; Pramanik, G.; Biskupek, J.; Extermann, J.; Kaiser, U.; Lasser, T.; Weil, T. NIR-emitting and Photo-thermal Active Nanogold for Mitochondria Targeting. *Biomater. Sci*. **2017**, *5 (5)*, 966-971.
21) Ong, X.; Gupta, S.; Wu, W. Y.; **Chakrabortty, S.**; Chan, Y. Facet-to-facet Linking of Shape-anisotropic Colloidal Cadmium Chalcogenide Nanostructures. *J. Vis. Exp*. **2017**, *126*, e56009 (doi:10.3791/56009).
22) Gupta, S.; Wu, W.-Y.; **Chakrabortty, S**; Li, M.; Wang, Y.; Ong, X.; Chan, Y. Hierarchical Multicomponent Nanoheterostructures via Facet to Facet Attachment of Anisotropic Semiconductor Nanoparticles. *Chem. Mater*. **2017**, *29*, 9075-9083.
23) Wu, Y.; Li, L.; Frank, L.; Wagner, J.; Andreozzi, P.; Hammer, B.; D'Alicarnasso, M.; Pelliccia, M.; Liu, W.; **Chakrabortty, S.**; Krol, S.; Simon, J.; Landfester, K.; Kuan, S. L.; Stellacci, F.; Müllen, K.; Kreppel, F.; Weil, T. "Patchy Amphiphilic Dendrimers Bind Adenovirus and Control Its Host Interactions and in Vivo Distribution" *ACS Nano*, **2019**, *13, 8*, 8749-8759.

After Joining SRM AP

24) Vegi, N. M.; **Chakrabortty, S.**; Zegota, M. M.; Kuan, S. L.; Stumper, A.; Rawat, V. P. S.; Sieste, S.; Buske, C.; Rau, S.; Weil, T.; et al. "Somatostatin Receptor Mediated Targeting of Acute Myeloid Leukemia by Photodynamic Metal Complexes for Light Induced Apoptosis." *Sci. Rep.* **2020**, *10 (1)*, 371.
25) Dalapati, G. K.; Masudy-Panah, S.; Moakhar, R. S.; **Chakrabortty, S.**; Ghosh, S.; Kushwaha, A.; Katal, R.; Chua, C. S.; Xiao, G.; Tripathy, S.; et al. "Nanoengineered Advanced Materials for Enabling Hydrogen Economy: Functionalized Graphene–Incorporated Cupric Oxide Catalyst for Efficient Solar Hydrogen Production." *Glob. Challenges* **2020**, 1900087.
26) Naskar, N.; Schneidereit, M. F.; Huber, F.; **Chakrabortty, S.**; Veith, L.; Mezger, M.; Kirste, L.; Fuchs, T.; Diemant, T.; Weil, T.; Behm, R. J.; Thonke, K; Scholz, F. "Impact of Surface Chemistry and Doping Concentrations on Biofunctionalization of GaN/Ga–In–N Quantum Wells" *Sensors* **2020**, *20(15)*, 4179.
27) Ye,W.; Han, H.; Li, H.; Jin, Q.; Wu, Y.; **Chakrabottty, S.**; Weil, T.; Ji, J. "Polymer Coated Nanodiamonds as Gemcitabine Prodrug with Enzymatic Sensitivity for Pancreatic Cancer Treatment.'' *Progress in Natural Science: Materials International* **2020**, *30 (5)*, 711-717.

28) Bandaru, S.; Mahata, C.; **Chakrabortty, S.**; Ghosh, S.; Algadi, H.; Ramakrishna, S.; Dalapati, G. K. "Nano-structured CuO on Silicon Using a Chemical Bath Deposition Process and Sputter Seed Layer." *Journal of Electronic Materials*, **2021**, *50*, 1779-1785.
29) Dalapati, G. K.; **Chakrabortty, S.** et . al. "Critical Review on SnO2 for Transparent Conductor and Electron Transport Layer: Impact on Dopants and Functionalization of SnO2 on Photovoltaic and Energy Storage Devices" *J. Mater. Chem. A*, **2021**, *9*, 16621-16684.
30) Dalapati, G. K.; **Chakrabortty, S.** et . al. "Efficient Plastic Recycling and Remolding Circular Economy Using the Technology of Trust–Blockchain." *Sustainability*, **2021**, *13*(16), 9142.
31) Nawade, A.; Dalapati, G. K.; Mukhopadhyay, S.; **Chakrabortty, S.** et . al. "Copper based transparent solar heat rejecting film on glass through in-situ nanocrystal engineering of sputtered TiO_2." *Ceramics International*, **2022,** *48 (2)*, 2482-2491.
32) Naskar, N.; Wagner, M.; Räder, H. J.; Qi, H.; Kaiser, U.; Weil, T.; **Chakrabortty, S.*** Molecular Insights of Carbon Nanodot Formation and Their Two-Photon Emission Properties. *Advanced Photonics Research*, **2022,** *3*, 2100092(1-12).
33) Busi, K.B.; Palanivel, M.; Ghosh, K.K.; Ball, W. B.; Gulyás, B.; Padmanabhan, P;* Chakrabortty, S.* "The Multifarious Applications of Copper Nanoclusters in Biosensing and Bioimaging and Their Translational Role in Early Disease Detection." *Nanomaterials*, **2022**, 12 (3), 301
34) Mahata, C.; Jyothirmai, M.V.; Ravva, M. K.; **Chakrabortty, S.**; Kim, S.; Biring, S.; Ramakrishna, S.; Dalapati, G.K. "Electronic structure and origin of intrinsic defects in sputtered HfTiO2 alloy dielectric on GaAs surface" *Journal of Alloys and Compounds*, **2022**, *910*, 164817.
35) Krishna, A. M.S.; Dalapati, G. K. *; **Chakrabortty, S.** * et . al. "Photovoltaic/Photo-Electrocatalysis Integration for Green Hydrogen: A review" *Energy Conversion & Management*, **2022**, *261*, 115648.
36) Busi, K. B.; Kotha, J.; Bandaru, S.; Ghantasala, J. P.; Haseena, S.; Bhamidipati, K.; Puvvada, N.; Ravva, M. K.; Thondamal, M.; **Chakrabortty, S.*** "Engineering Highly Stable, Fluorescent and Non-toxic Cu Nanoclusters via Reaction Parameter Optimization." *RSC Advances*, **2022**, *12 (27)*, 17585.
37) Nawade, A.; Busi, K. B.; Ramya, K.; Dalapati, G. K.; Mukhopadhyay, S.; **Chakrabortty, S.*** Improved Charge transport across Bovine Serum Albumin – Au nanoclusters Hybrid Molecular Junction. *ACS Omega*, **2022**, *7*, 20906.
38) Naskar, N.; Liu, W.; Qi, H.; Stumper, A.; Fischer, S.; Diemant, T.; Behm, R. J.; Kaiser, U.; Rau, S.; Weil, T.; **Chakrabortty, S.*** "A Carbon Nanodot Based Near-Infrared Photosensitizer with a Protein-Ruthenium Shell for Low-Power Photodynamic Applications." *ACS Applied Materials & Interfaces*, **2022**, *14 (43)*, 48327-48340.
39) Pramanik, G.*; Bag, S.; **Chakrabortty, S.*** Fluorescent Nanodiamond for Nanotheranostic Applications. *Microchimica Acta*, **2022**, *189 (12)*, 447.
40) Busi, K.B.; Das, S.; Palanivel, M.; Ghosh, K.K.; Gulyás, B.; Padmanabhan, P;* **Chakrabortty, S.*** "Surface Ligand Influences the Cu Nanoclusters as a Dual Sensing Optical Probe for Localized pH Environment and Fluoride Ion." *Nanomaterials*, **2023**, *13 (3)*, 529.
41) Krishna, A. M. S.; Ramasubramanian, B.; Haseena, S.; Bamola, P.; Sharma, H.; Mahata, C.; Chroneos, A.; Krishnamurthy, S.; Ravva, M. K.; Chandu, B.; Lim, Y-F.; Kumar, A.; Ramakrishna, S.; Biring, S.; **Chakrabortty, S.**; Dalapati. G. K. "Functionalized Graphene-Incorporated Cupric Oxide Charge-Transport Layer for Enhanced Photoelectrochemical Performance and Hydrogen Evolution." *Catalysts*, **2023**, *13(4)*, 785.
42) Liu, C-Y.; Ram, R.; Kolaru, R. B.; Chang, S-H.; **Chakrabortty, S.**; Lin, Y-N.; Chu, C-S.; Biring, S. "Developing highly reliable SERS substrates based on Ag grown on alumina nanomeshes anodized under 1 V for efficiently sensing Raman-active molecules." *Sensors and Actuators B: Chemical*, **2023**, *386*, 133739.
43) Gundepudi, K.; N. P. M.; Sangaraju, S.; Dalapati, G. K.; Ball, W. B.; Ghosh, S.;* **Chakrabortty, S.*** "A review on the role of nanotechnology in the development of near-infrared photodetectors: materials, performance metrics, and potential applications" *Journal of Materials Science*, **2023**, *58*, 13889-13924.
44) Busi, K.B.; Palanivel, M.; Jyothi, K.; Zoey, F. LG.; Zahid, S.; Ghosh, K.K.; Agrawalla, B. K.; Gulyás, B.; Halkarni, S.; Thondamal, M.; Padmanabhan, P;* **Chakrabortty, S.*** "Potential impact of various surface ligand on the cellular uptake and biodistribution characteristics using Red, Green, Blue emitting Cu nanoclusters" *RSC Advances*, **2023**, *13*, 25862-25870.
45) Bandaru, S.; Sen, A.; Pramanik, G.; Dalapati. G. K.; Biring, S;* **Chakrabortty, S.*** Protein Encapsulated Covellite CuS Nanospheres for the Efficient Oxidative Degradation of Organic Dyes in Wastewater. *Environmental Advances*, **2023**, *13*, 100428(1-12).
46) Dalapati, G. K.;* Ghosh, S.;* Sherin P. A. T.; Ramasubramanian, B.; Samanta, A.; Rathour, A.; Wong, T. K. S.; **Chakrabortty, S.;*** Ramakrishna, S.;* Kumar, A. "Maximizing solar energy production in ASEAN region: Opportunity and challenges" *Results in Engineering*, **2023**, *20*, 101525(1-18).
47) Bandaru, S.; Ravipati, M.; Busi, K. B.; Phukan, P.; Bag, S.;* Chandu, B.; Dalapati, G. K.; Biring, S.;* **Chakrabortty, S.*** "A Review on the Fate of Microplastics: Their Degradation and Advanced Analytical Characterization" *Journal of Polymers and the Environment*, **2023**, https://doi.org/10.1007/s10924-023-03102-7.
48) Karthigaimuthu, D.; Raju, K.; **Chakrabortty, S.**; Ghosh, S.; Arjunkumar, B.; Elangovan, T.; Sambasivam, S.* "Rational Design of Mg(OH)2/Cu2(OH)3(NO3) Binary Heterostructure Electrodes for Enriched Supercapacitors Performance" *Ionics*, **2023**, https://doi.org/10.1007/s11581-023-05304-4.
49) Mariam, E.; Dalapati, G.K.;* Ghosh, S.; Sherin PA, T.; **Chakrabortty, S.**; Ramasubramanian, B.; Reddy, V. S.; Motapothula, M. R.; Kumar, A.; Ramakrishna, S.;* Krishnamurthy, S.* "Emerging Trends in Cooling Technologies for PV systems" *Renewable and Sustainable Energy Reviews*, **2024**, *192*, 114203 (1-23).
50) Mavuduru, V. A.; Vadupu, L.; Ghosh, K. K.; **Chakrabortty, S.**; Gulyás, B.; Padmanabhan, P.;* Ball, W. B.* "Mitochondrial phospholipid transport: Role of contact sites and lipid transport proteins" *Progress in Lipid Research*, **2024**, *94*, 101268 (1-12).
51) Krishna, A. M. S.; Busi, K. B.; Ramasubramanian, B.; Reddy, V. S.; Samanta, A.; Ramakrishna, S.; Ghosh, S;* **Chakrabortty, S.;*** Dalapati, G. K.* "Sputter grown CuO thin films: Impact of growth pressure and annealing temperature on their microstructural architectures" *Memories - Materials, Devices, Circuits and Systems*, **2024**, Accepted.
52) Bandaru, S.; Palanivel, M.; Ravipati, M.; Wu, W-Y.; Zahid, S.; Halkarni, S. H.; Dalapati, G. K.; Ghosh, K. K.; Gulyás, B.; Padmanabhan, P.;* **Chakrabortty, S.*** "Highly Monodisperse, Size Tunable Glucosamine Conjugated CdSe Quantum Dots for Enhanced Cellular Uptake and Bioimaging" *ACS Omega*, **2024**, *9(7)*, 7452-7462.
53) Vijayakumar, G.; Reddy. A. S.; Bandaru, S.; **Chakrabortty, S.**; Habila, M. A.; Kumar, B. A.; Sangaraju, S. "Facile synthesis of WSe_2/PEG nanostructures as a highly efficient with superior photocatalytic performance" *Inorganic Chemistry Communications*, **2024**, *164*, 112447 (1-9).

54) Mukherjee, A.; Ghosh, K.K.; **Chakrabortty, S.**; Gulyás, B.; Padmanabhan, P.; Ball, W.B. "Mitochondrial Reactive Oxygen Species in Infection and Immunity" *Biomolecules*, **2024**, *14*, 670.
55) Neelamraju, P. M.; Gundepudi, K.; Sanki, P. K.; Busi, K. B.; Mistri, T. K.; Sangaraju, S.; Dalapati, G. K.; Ghosh, K. K.; Ghosh, S.*; Ball, W. B.*; **Chakrabortty, S.*** "Potential applications for photoacoustic imaging using functional nanoparticles: A comprehensive overview" Heliyon, 2024, 10, e34654.
56) Sherin, T.; Motapothula, M. R.; Dalapati, G. K.; Ramakrishna, S.; Sangaraju, S.; **Chakrabortty, S.***; Krishnamurthy, S.*; Ghosh, S*. "A comprehensive review on realization of self-cleaning surfaces by additive manufacturing" *Prog Addit Manuf*, **2024**, https://doi.org/10.1007/s40964-024-00734-6.
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64) Gomasu, S.; Saha, S.; **Chakrabortty, S.**; Ghosh, S.; Das, D.* "Influence of CaTiO3 on Structural, Microstructural, Electrical and Dielectric Properties of Microwave Sintered BiFeO3-Based Lead-Free Ceramics" *Journal of Materials Science: Materials in Electronics*, **2024**, *35*, 2183.
65) Khan, R.; Iqbal, S.; Raziq, F.; Maram, P. S.; **Chakrabortty, S.**; Sangaraju, S. "Nonlinear and Linear Conductance Modulation and Synaptic Plasticity in Stable Tin-Zinc Oxide Based-Memristor for Neuro-Inspired Computing" *Materials Science in Semiconductor Processing*, **2025**, 186, 109111.
66) Sherin, T.; Bandaru, S.; Motapothula, M. R.; Dalapati, G. K.; Sangaraju, S.; Krishnamurthy, S.; Ball, W. B.; **Chakrabortty, S.***; Ghosh, S.* "Facile Fabrication of Multi-Functional Super Hydrophobic Surfaces Synthesized by Additive Manufacturing Technique Modified with ZnO Nanoparticles" *Langmuir*, **2025**, *41, 4*, 2312-2322.
67) Dhanasekaran, G.; Parthiban, N.; Keerthana, T.; Gopal, R.; Sangaraju, S.; **Chakrabortty, S.**; Thangavel, E. "Enhanced electrochemical performance of (MoSe2@NiSe2)(0D/1D) hybrid nanostructures for supercapacitors" *Materials Science and Engineering: B*, **2025**, *313*, 117975.
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70) Busi, K. B.; Jyothi, K.; Ghosh, S.; **Chakrabortty, S.;*** Thondamal, M.; Ball, W. B. "A comprehensive Biocompatibility Evaluation of Fluorescent Gold Nanoclusters using Caenorhabditis Elegans as a Model Organism" *Materials Today Chemistry*, **2025**, *45*, 102642.
71) Srivastava, M.; Ramasubramanian, B.; Ghorui, U. K.; Dalapati, G. K.; Selvaraj, V.; Kumar, A.; Biring, S.; Ribeiro, C. S.; Ghosh, S.; Krishnamurthy, S.; **Chakrabortty, S.*** "Exploring the Potential and Roadblocks of Marketable Energy Storage Technologies for Renewable Energy" *Energy Technology*, **2025**, Just Accepted.
72) Ghorui, U. K.; Sampath, A. M. V. R.; Sivaguru, G.; Dutta, R.; Sangaraju, S.; **Sabyasachi Chakrabortty, S.*** "B-Doped GQD Supported Cobalt Sulfide Nanocomposite: A Defect Engineering Approach for Superior Oxygen Electrode Performance" *Catalysis Today*, **2025**, *454*, 115287 (1-14).
73) Sherin, T.; Raman T. S. A.; Mangattuchali, M.; Rana, A.; Sangaraju, S.; **Chakrabortty, S.**; Rana, A.; Raju, K.; Ghosh, S. "Tuning Hydrophobicity of Laser Annealed rGO Thin Film Synthesized by Pulsed Laser Deposition" *Langmuir*, **2025**, *41*, 10223-10229.
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76) Ghorui, U. K.;* Sivaguru, G.; Sk, M.; Thapa, R.; Sampath, A. M. V. R.; **Sabyasachi Chakrabortty, S.*** "Defect-Engineered N-Doped Graphene Oxide-ZnWO4 Nanocuboids: Advancing Oxygen Reduction and Photo-Assisted Methanol Oxidation Reactions" *Small*, **2025**, 2505511.
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80) Biswas, B.*; Wong, T. K. S.*; Dalapati, G. K.*; **Chakrabortty, S.*** "Advanced Materials for Sustainable Energy and Decarbonization" *ACS Applied Energy Materials*, **2025**, *8*, 13999-14000.
81) Sivaguru, G.; Ghorui, U. K.; Sangaraju, S.; **Chakrabortty, S.*** "Low-Cost Delafossite-Perovskite Nanocomposite for Improved Energy Storage Applications" *Materials Chemistry and Physics*, **2025**, *349 (1)*, 131744.
82) Sivaguru, G.; Ghorui, U. K.; Mangalasseri, A.; Reza, S.; Dutta, R.; Ghosh, S.; Dalapati, G. K.; Thapa, R.; **Chakrabortty, S.*** "Cation Substituted Entropy Driven Cu–Mn–Zn–Cr–O Metal Oxide for Efficient Seawater Splitting and Hybrid Supercapacitors" *Small*, **2025**, e10306.

Book Chapter

1) "Recent developments in the synthesis of metal-tipped semiconductor nanorods" by **Sabyasachi Chakrabortty**, Yinthai Chan INTECH Publishers, 2012, Book Name – Nanorods, Chapter 11.
2) "Recent Development in Smart Window Engineering: A Special Focus on Antibacterial Activity" by Kumar Babu Busi, Siddhartha Ghosh, **Sabyasachi Chakrabortty***. Elsevier Publishers, 2020, Book Name – Energy Saving Coating Materials, Chapter 10.
3) "Synthesis of Nanoparticles and Their Conjugates for Targeted Therapeutic Applications" by **Sabyasachi Chakrabortty**,* Sunil K Vimal, Sanjib Bhattacharya*. Nanopharmaceuticals: Principles and Applications, 2020 Vol. 1, 347-376.
4) "Photovoltaic/catalysis integration towards a 100% renewable energy infrastructure" by Ambati Mounika Sai Krishna, Goutam Kumar Dalapati, * Raghavendra Lawaniya, Aniket Samanta, Avishek Kumar, **Sabyasachi Chakrabortty*** Elsevier Publishers, 2022.
5) "Overview of nanoengineering: synthesis, classification, characterization, functionality, and applications" **Sabyasachi Chakrabortty** et. al., Elsevier Publishers, 2024.

Patent

1) "***Spontaneous assembly of various semiconductor nanostructures via all-Inorganic linkages for optoelectronic applications***" by **Sabyasachi Chakrabortty**, Nimai Mishra, Yinthai Chan (provisionally filed US patent; Application No.: 62/171,420).

2) "**A process for the preparation of super-hydrophobic surface**" by Thanseeha Sherin, Shamili Bandaru, M. Rao M., **Sabyasachi Chakrabortty**, Siddhartha Ghosh (INDIAN patent; Application No.: 202341064252).

3) "**System and method for synthesis and integration with different electrodes for hydrogen production**" by Goutam Kumar Dalapati, Amit Kumar Chakraborty, Avishek Kumar, **Sabyasachi Chakrabortty**, Ambati Mounika Sai Krishna (Singapore Patent; Application No.: 10202401650X)

4) **"Electrode Material" - A ternary transition metal oxide electrode material for efficient H_2 generation** – by **Sabyasachi Chakrabortty**, Uday Kumar Ghorui, Gokul Sivaguru (INDIAN patent; Application No.: 202441075507)

5) "**A Process for the Synthesis of Doped Graphene Quantum Dots for H_2O_2 Sensing**" - by **Sabyasachi Chakrabortty**, Ummadisetti Bhanu Teja, Uday Kumar Ghorui, Shamili Bandaru (INDIAN patent; Application No.: 202541010723)

6) "**Engineering Fe/Ni Oxide(s) Based Core/Shell nanostructures for Efficient Oxygen Evolution Reaction**" – by Shagufta gull, Uday Kumar Ghorui, Nilja George, Siddhartha Ghosh, **Sabyasachi Chakrabortty** (INDIAN patent; Application No.: 202541044395)

7) "**Processing of A Band Tunable Copper Based Metal Oxide Alloy with High Index Facet for Production of Hydrogen by Electro Catalytic Water Splitting**" - Goutam Kumar Dalapati, Amit Kumar Chakraborty, Avishek Kumar, **Sabyasachi Chakrabortty**, Ambati Mounika Sai Krishna (INDIAN patent; Application No.: 202534049045)

8) "**A Metal Ion Functionalized Hybrid MOF for Hydrogen Evolution Reaction and A Process for the Preparation Thereof**" – by **Sabyasachi Chakrabortty**, Goutam Kumar Dalapati, Gokul Sivaguru, Uday Kumar Ghorui (INDIAN patent; Application No.: 202531061211)

9) "**Hydrothermally Synthesized Core-Shell Nanostructured Electrocatalyst for Hydrogen Evolution**" by **Sabyasachi Chakrabortty**, Uday Kumar Ghorui, Rituparna Dutta (INDIAN patent; Application No.: 202541129313)

Invited Talk / Plenary

- Invited talk at Advanced Materials & Technologies for Sustainable Energy & Future, 2025 (Amtsef-25) at University of North Bengal, India, September 2025.
- Invited talk at Global Conference on Sensors & Artificial Intelligence Learning (SAIL-25) at Ming Chi University of Technology, Taishan, New Taipei City, Taiwan, R.O.C., April 2025.
- Invited talk at First International Conference on Sustainable Technologies (ICST-2024) at NIT-Durgapur, December 2024.
- ***Distinguished/Young Scientists Award*** talk - Global Conference for Decarbonization of Energy and Materials (GCDEM-2024), Singapore, November 2024.

- Invited talk at 1st International Conference on Global Conference for Decarbonization of Energy and Materials GC-DEM 2023 conference, NTU Alumni @ One north, Singapore, December 2023 (Online talk).
- Invited talk at 1st International Conference on GCRC 2023 conference, GITAM School of Science, Visakhapatnam, December 2023.
- Oral Presentation at 11th International Conference on Materials for Advanced Technologies (ICMAT), Singapore on June, 2023.
- Invited talk at Jagarlamudi Kuppuswamy Choudary (JKC) College, India for a postgraduate chemistry department seminar on "Engineering Smart Nanomaterials for Diagnostic and Photodynamic Therapy" on 26th November 2021.
- Invited talk at National Seminar on Recent Trends in Nanoscience & Nanotechnology - 2020 (NSRTN -2020), Department of Nanotechnology, Acharya Nagarjuna University, India.
- Invited talk at 10th International Conference on Materials for Advanced Technologies (ICMAT), Singapore on June, 2019.
- Invited talk at 5th International Conference on "Nanotechnology for Better Living", Jointly organized by NIT Srinagar and IIT Kharagpur From 7-11 April 2019 (not attended).
- Invited talk at Ramnagar College, India in a national seminar on "Health Risks of Processed Food" on 9th March 2018.
- Invited talk at International Conference on Advancements and Challenges in Chemical Sciences (ICACCS 2018) (February, 2018) PG & Research Department of Chemistry, Pachaiyappa's College, Chennai, India.
- Invited talk at 8th World Congress on Targeting Mitochondria (October 23-24, 2018), Berlin, Germany (not attended).
- Invited talk at Max-Planck-Institute for Polymer Research, Germany in MPIP Highlights Colloquium held on June, 2017.
- *Plenary talk* (on behalf of Prof Tanja Weil) in "MACRO 2017" an international conference held in Thiruvananthapuram, India (January 2017).
- Invited talk at CSIR – National Institute for Interdisciplinary Science and Technology (NIIST), India in January 2017.
- Invited talk at Indian Institute of Science Education and Research, Kolkata (IISER-Kolkata), India in April 2016.
- Invited talk at Indian Institute of Technology Kharagpur (IIT-KGP), India in March 2016.

Conferences

- Presented Poster on "ICONSAT 2020" an international conference held in Kolkata (March, 2020).

Before joining as Faculty

- Presented Poster on "SolChem Ulm, 2017 - International Symposium on Solar-Driven Chemistry" an international conference held in Universitat Ulm, Germany (October, 2017).
- Oral presentation on "Engineering Protein Based Bio-polymer Coated Functional Nanomaterials for Bio-application" in "MACRO 2017" an international conference held in Thiruvananthapuram, India (January, 2017).
- Presented poster on "*Fluorescent Hybrid Metal-Semiconductor Nanostructures from the Selective Deposition of Metal Nanoparticles on Semiconductor Nanorods*" in "2011 MRS FALL MEETING" an international conference held in Boston, USA (Nov-Dec, 2011). **Nominated for best poster award**.
- Presented poster on "*Selective Metal Deposition on Seeded Semiconductor Nanorods, Unfolding Their Unique Fluorescent Behaviour*" in "China Nano 2011" an international conference held in Beijing, China (September, 2011).
- Presented poster on "*Directed Assembly of Fluorescent Au-tipped CdSe seeded CdS nanorods*" in "International Conference on Materials for Advanced Technologies 2011" an international conference held in Singapore (June-July, 2011).
- Presented poster on "*Selective Deposition of Metals on Seeded Semiconductor Nanorods*" in "Other big ideas in molecular materials" an international conference held in Singapore (November, 2010). **Selected as best poster award**.
- Presented poster on "*Asymmetric Dumbbells from Selective Deposition of Metals on Seeded Semiconductor Nanorods*" in "1st China-India-Singapore Symposium on Crystal Engineering" held in National University of Singapore, Singapore (August, 2010)
- The prestigious International Symposium in Modern Trends in Inorganic Chemistry (MTIC XII) (December 6-8, 2007) organized at IIT Madras, India.

Teaching Experiences

- Taught the flowing courses in SRM University AP – Andhra Pradesh –
  - CHE 101 – Principles of Chemistry (Introductory course for BTech students)
  - CHE 101 L – Principle of Chemistry Laboratory (Introductory course for BTech students)
  - CHE 503 - Physical Chemistry –I: Thermodynamic Systems and States of Matter (Course for **M.Sc.** students)
  - CHE 111 – Principles of Chemistry – I (Introductory course for BSc allied students)
  - CHE 113 – Physical Chemistry –I (Course for **B.Sc. Honours** students)
  - CHE 113 L – Physical Chemistry Laboratory I (Course for **B.Sc. Honours** students)
  - CHE 123 – Polymeric Materials (Course for **B.Sc. Honours** students)
  - CHE 201 – Fundamental of Nanoscience (**Elective** course for BTech students)
  - CHE 501 - Colloidal Chemistry and Nanomaterials Synthesis (Course **for PhD** students)
- Taught the "CM3292: Physical Chemistry" practical course for 3rd year undergraduate students in National university of Singapore, Singapore.
- **Postdoc supervision** – 1.
- **Supervision of PhD Project (2 – awarded, 6 ongoing).**
  - ~~**Mr**~~ **Dr. Nilanjon Naskar** (Thesis defended from MPIP Germany April 2023)
  - ~~**Mr**~~ **Dr. Kumar Babu Busi** (Thesis defence on 4th August 2023)
  - Ms Shamili Bandaru (at SRM AP - expected to defend middle of this year)
  - Ms. Mounika Sai Ambati (at SRM AP - expected to defend end of this year)
  - Mr S. Gokul (Started May - 2023)
  - Mr. Bhanu Teja Ummadisetti (Started Oct - 2023)
  - Ms Rituparna Dutta (Started Nov - 2023)
  - Ms Awsathi M (Started Jan - 2024)

- Supervision of M.Sc. Project – **2 completed** at SRM AP (and **3 Ongoing currently**)
- Supervision of M.Sc. Project (1 completed), Final Year Project (FYP, undergraduate - 3 finished projects), UROP (1 finished project) in NUS, Singapore.
- Supervision of Bachelor Project (3 finished projects, 0 ongoing) and HiWi projects (2 Masters finished project, 1 Bachelor ongoing project) in Universität Ulm, Ulm, Germany.

Personal Details

- Language skill – **English** (can Read, Write and Speak), **Bengali** (can Read, Write and Speak), **Hindi** (can Read, Write and Speak) and **German** (passed A1)

References

- Professor Tanja Weil, Director,
  Max-Planck-Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany. Tel: +49 6131 379 130 /131
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  Director of iWearables Center
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- Professor Satheesh Krishnamurthy
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- Professor Dillip Kumar Chand,
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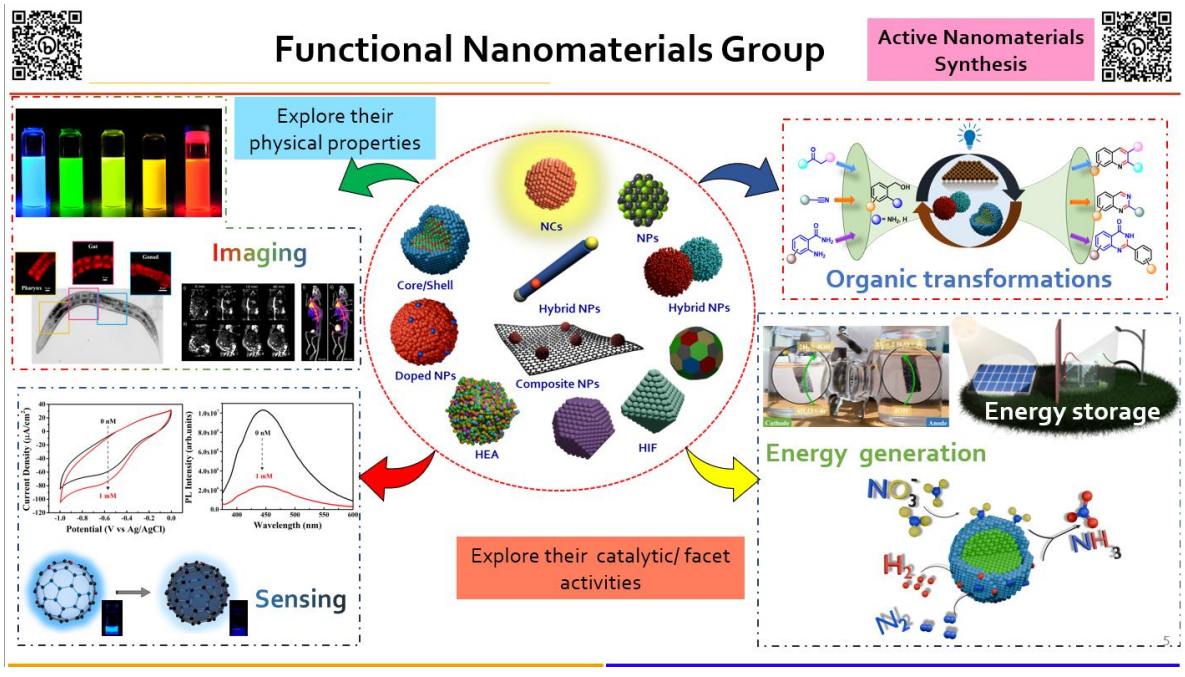
Research Interests (/Focus)



Grant Received:

Serial No	*Title*	*Funding Agency*	*Value (Rs. Lakh INR)*	*Year*	*Duration*	*PI/Co-PI*
1	Development of Cu-Nanoclusters - Carbon dots Nano-hybrid for Multimodal Catalytic Activity	DST-SERB-SURE	27 L	2023	3 years	PI
2	Centre for Advanced Materials and Catalysis	DST FIST	220 L	2022	5 years	Co-PI
3	Synthesis of High Indexed Faceted, Near Infra-Red (NIR) Active Hybrid Nanomaterials for (Photo)Catalysis	UGC-DAE-CSR	1.35 L	2022	3 years	PI
4	ITS (International Travel Support)	ANRF	Not availed (1.2 L)	2024	Not availed	PI
5	Kinetically Controlled Synthesis of Active Nanomaterials for Energy Applications	SRM University - *AP*	23 L	2023	2 years	PI

Institutional Engagements:

→ **Associate Professor & Head of the Department**, Department of Chemistry, SRM University - *AP*, Andhra Pradesh-522240, India.

→ **Faculty Advisor, Energy Domain, Centre for Interdisciplinary Research (CIDR),** SRM University - *AP*

Institute level:

- Joint Organizer and Convenor of every edition of SRM-AP Research Colloquium (9th Edition until today).
- Judges for chemical sciences division (faculty and PhD category), for Research Day 2021.
- Member as a faculty for Alumni Association Committee from SRM AP (University level, office order attached).
- Member – Student Management committee in the Convocation of SRM University AP – Andhra Pradesh.
- Co-convenor – 4th Edition of RESEARCH DAY, 2022 at SRM University AP – Andhra Pradesh.
- Convenor – 1st Research Scholars Summit, 2024 at SRM University AP – Andhra Pradesh.
- Act as Resource Person for Faculty Development Program about Research Instrumentations.
- Allied Department PhD student Doctoral Committee member.
- etc.

Department level:

- Course Director and Exam/ERP Coordinator, Department of Chemistry.
- Involved in the modification of the syllabus for B.Tech. Chemistry course.
- Designed and developed B.Sc. Chemistry and M.Sc. Chemistry curriculum and syllabus.
- Members for the preparation of Annual report of Chemistry Department.
- Co-Convenor for School Outreach Program Dept of Chemistry.
- Coordinator of online attendance committee from Chemistry Department.
- Coordinator to maintain up-to-date Chemistry Department website.
- Internal member for BOS Chemistry Department.
- Website Co-ordinator for Chemistry Department (2 year).
- Chemistry Webinar (3 sessions) and Chemistry Department lecture series -organizing committee.
- Member of Admission 2021 representative from Chemistry Department
- Chemistry Webinar (3 sessions) and Chemistry Department lecture series -organizing committee.