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Assistant Professor, Department of Chemistry
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EDUCATION

PhD in Science (2008-2012): Thesis entitled, “*Synthesis, characterization and catalytic properties of semiconductor metal oxide and metal sulfide nanomaterials*”. Indian Institute of Engineering Science and Technology, West Bengal, India.

Masters of Science (2006-2008): Applied Chemistry (Inorganic chemistry as Major); Indian Institute of Engineering Science and Technology, Shibpur, West Bengal, India. M.Sc- Dissertation “*Studies on Metal Thio-carboxylates: Precursor for Metal Sulphide Nanomaterials*”.

Bachelor of Science (2003-2006): Honors in Chemistry with Physics and Mathematics, The University of Burdwan, West Bengal, India.

RESEARCH EXPERIENCE

Post-Doctoral Fellow: (a) December 2017 –November 2018: Department of Chemistry and Nano science, *Ewha Womans University, South Korea*. (b) January 2015 – March 2015: Department of Materials & Interfaces, *The Weizmann Institute of Science, Israel*. (c) October 2014 – December 2014: Department of Chemistry and Nano science, Division of Molecular and Life Sciences, College of Natural Sciences, *Ewha Womans University, South Korea*. (d) Division of Chemistry and Biological Chemistry, School of Physical and Mathematical Sciences, *Nanyang Technological University, Singapore*.

Senior Research Fellow (April 2012 – September 2012): Funded by Council of Scientific and Industrial Research (CSIR), India, at *Indian Institute of Engineering Science and Technology, Shibpur, India*.

Junior Research Fellow (January 2010 – March 2012): University Grants Commission (UGC), India, funded Rajiv Gandhi National Fellowship Scheme (RGNFS), at *Indian Institute of Engineering Science and Technology, West Bengal, India*.

Project Fellow (August 2008 - December 2010): UGC funded Project at *Indian Institute of Engineering Science and Technology, West Bengal, India*.

RESEARCH PROJECT

- **SCIENCE & ENGINEERING RESEARCH BOARD_SURE:** Project Title: Direct Plasmon-Enhanced Electrocatalysis by Plasmonic-Semiconductor@2-D Nanosheet for Biosensing of Crucial Molecules and Cancerous Cells (File no. – SUR/2022/000011, dt. 13/10/2023)

TEACHING EXPERIENCE

Assistant Professor (1st April 2015): “*Khatra Adibasi Mahavidyalaya*”, Recognized by Bankura University, West Bengal, India.

RESEARCH INTERESTS

- Design and fabrication of hybrid nanomaterials based on graphene, molybdenum disulfide, gold/silver and semiconductor nanostructures
- Biomedical Science: Bio-imaging, detection and therapy of tumor cells
- Nanomaterials based bio- and chemo- sensors, Energy material for catalytic or photocatalytic activities

PUBLICATIONS

A. Corresponding Authorship Publications:

1. Plasmon-Accelerated Electrocatalysis Based on Gold Nanostructures for Electrochemical Reactions and Biosensing Applications: A Review. **S.K. Maji***, S. Khan, R. Mondal. *ACS App. Nano Mater.* *xx* (2024) xxx-xxxx. (DOI: 10.1021/acsnm.4c00325) **IF = 5.9 (Cited – 00)**
2. Graphene Oxide Wrapped Gold Nanorods for Direct Plasmon Enhanced Electrocatalysis to Detect Hydrogen Peroxide and in the Hydrogen Evaluation Reaction. D. Datta, J. W. Lim, R. C. Maji, * **S.K. Maji***. *ACS App. Nano Mater.* *6* (2023) 2729–2740. **IF = 5.9**
3. Luminescence-Tunable ZnS-AgInS₂ Nanocrystals for Cancer cell Imaging and Photodynamic Therapy. **S.K. Maji***. *ACS App. Biomater.* *5* (2022) 1230-1238. **IF = 4.7**
4. Plasmon-Enhanced Electrochemical Biosensing of Hydrogen peroxide from Cancer Cells by Gold Nanorods. **S.K. Maji***. *ACS App. Nano Mater.* *2* (2019) 7162–7169. **IF = 5.9**
5. AgInS₂ coated upconversion nanoparticle as a photocatalyst for near-infrared light activated photodynamic therapy of cancer cells. **S.K. Maji***, D.H. Kim*. *ACS App. Biomater.* *1* (2018) 1628 – 1638. **IF = 4.7**
6. Two-dimensional nanohybrid (RGS@AuNPs) as an effective catalyst for reduction of 4-nitrophenol and photo-degradation of methylene blue dye. **S.K. Maji***, A. Jana. *New J. Chem.* *41* (2017) 3326 – 3332. **IF = 3.3**

B. First Authorship Publications:

1. Anisotropic Plasmonic Nanohybrid (GNRs-ICG@rGO-DOX) for Image-Guided Enhanced Tumor Theranostics by Synergistic Catalytic-/Chemo-Therapy with Combinatorial Photothermal Treatment. **S.K. Maji**, S. Yu, E. Choi, J. W. Lim, D. Jang, G.Y. Kim, S. Kim, H. Lee, D. H. Kim. *ACS Omega* *7* (2022) 15186–15199. **IF = 4.1**
2. Synergistic Nanozymetic Activity of Hybrid Gold Bipyramid–Molybdenum Disulfide Core@Shell Nanostructures for Two-Photon Imaging and Anticancer Therapy. **S.K. Maji**, S. Yu, K. Chung, M. S. Ramasamy, J. W. Lim, J. Wang, H. Lee, D. H. Kim. *ACS App. Mater. Interfaces*, *10* (2018) 42068–42076. **IF = 9.5**

3. Cancer cell detection and therapeutics using peroxidase-active nanohybrid of gold nanoparticle-loaded mesoporous silica-coated graphene. **S.K. Maji**, A.K. Mandal, K.T. Nguyen, P. Borah, Y. Zhao. *ACS App. Mater. Interfaces*, 7 (2015) 9807–9816. **IF = 9.5**
4. Immobilizing gold nanoparticles in periodic mesoporous silica covered reduced graphene oxide: A hybrid material for cancer cell detection through hydrogen peroxide sensing. **S.K. Maji**, S. Sreejith, A.K. Mandal, M. Xing, Y. Zhao. *ACS Appl. Mater. Interfaces*, 6 (2014) 13648–13656. **IF = 9.5**
5. Upconversion nanoparticles as a contrast agent for photoacoustic imaging in live mice. **S.K. Maji**, S. Sreejith, J. Joseph, M. Lin, T. He, T. Yan, H.D. Sun, S.W. Yu, Y. Zhao. *Adv. Mater.*, 26 (2014) 5633–5638. **IF = 32.086 [Highlighted as a Frontispiece]**
6. Synthesis of Ag₂S quantum dots by a single-source precursor: an efficient electrode material for rapid detection of phenol. **S.K. Maji**, S. Sreejith, A.K. Mandal, A.K. Dutta, Y. Zhao. *Anal. Methods*, 6 (2014) 2059 – 2065. **IF = 3.532**
7. A novel amperometric biosensor for hydrogen peroxide and glucose based on cuprous sulfide nanoplates. **S.K. Maji**, A.K. Dutta, G.R. Bhadu, P. Paul, A. Mondal, B. Adhikary. *J. Mater. Chem. B*, 1 (2013) 4127 – 4134. **IF = 7.0**
8. Electrocatalytic activity of silver nanoparticles modified glassy carbon electrode as amperometric sensor for hydrogen peroxide. **S.K. Maji**, A.K. Dutta, D.N. Srivastava, P. Paul, A. Mondal, B. Adhikary, U. Adhikary. *J. Nanosci. Nanotechnol.* 13 (2013) 4969 – 4974. **IF = 1.354**
9. Single-source precursor approach for the preparation of CdS nanoparticles and their photocatalytic and intrinsic peroxidase like activity. **S.K. Maji**, A.K. Dutta, S. Dutta, D.N. Srivastava, P. Paul, A. Mondal, B. Adhikary. *Appl. Catal. B: Gen.*, 126 (2012) 265–274. [Corrigendum: 163 (2015) 628]. **IF = 22.1**
10. Synthesis and characterization of FeS nanoparticles obtained from a dithiocarboxylate precursor complex and their photocatalytic, electrocatalytic and biomimic peroxidase behavior. **S.K. Maji**, A.K. Dutta, P. Biswas, D.N. Srivastava, P. Paul, A. Mondal, B. Adhikary. *Appl. Catal. A: Gen.*, 419 – 420 (2012) 170 – 177. **IF = 5.5**
11. Nanocrystalline FeS thin film used as an anode in photo-electrochemical solar cell and as hydrogen peroxide sensor. **S.K. Maji**, A.K. Dutta, P. Biswas, B. Karmakar, A. Mondal, B. Adhikary. *Sensor Actuat. B: Chem.*, 166 – 167 (2012) 726 – 732. **IF = 8.4**
12. Peroxidase-like behavior, amperometric biosensing of hydrogen peroxide and photocatalytic activity by cadmium sulfide nanoparticles. **S.K. Maji**, A.K. Dutta, D.N. Srivastava, P. Paul, A. Mondal, B. Adhikary. *J. Mol. Cat. A: Chem.*, 358 (2012) 1 – 9. **IF = 4.6**
13. Synthesis, characterization and photocatalytic activity of α -Fe₂O₃ nanoparticles. **S.K. Maji**, N. Mukherjee, A. Mondal, B. Adhikary. *Polyhedron*, 33 (2012) 145 – 149. **IF = 2.6 [Highlighted as a top cited author for 2012-2013]**
14. Effective photocatalytic degradation of organic pollutant by ZnS nanocrystals synthesized via thermal decomposition of single-source precursor. **S.K. Maji**, A.K. Dutta, D.N. Srivastava, P. Paul, A. Mondal, B. Adhikary. *Polyhedron*, 30 (2011) 2493 – 2498. **IF = 2.6**
15. Deposition of nanocrystalline CuS thin film from a single precursor: Structural, optical and electrical properties. **S.K. Maji**, N. Mukherjee, A.K. Dutta, D.N. Srivastava, P. Paul, B. Karmakar, A. Mondal, B. Adhikary. *Mater. Chem. Phys.*, 130 (2011) 392 – 397. **IF = 4.6**

16. Synthesis and characterization of nanocrystalline and mesoporous zinc sulphide via zinc thiobenzoate-lutidine single precursor. **S.K. Maji**, N. Mukherjee, A. Mondal, B. Adhikary, B. Karmakar, S. Dutta. *Inorg. Chim. Acta*, 371 (2011) 20 – 26. **IF = 2.8**
17. Synthesis of nanocrystalline and mesoporous zinc sulphide from a single precursor Zn(SOCCH₃)₂Lut₂ complex. **S.K. Maji**, N. Mukherjee, A. Mondal, B. Adhikary, B. Karmakar. *J. Phys. Chem. Solid*, 72 (2011) 784 – 788. **IF = 4.0**
18. Chemical synthesis of mesoporous CuO from a single precursor: Structural, optical and electrical properties. **S.K. Maji**, N. Mukherjee, A. Mondal, B. Adhikary, B. Karmakar. *J. Solid State Chem.*, 183 (2010) 1900 – 1904. **IF = 3.3**
19. A symmetric oxo-centered trinuclear chloroacetato bridged iron(III) complex: Structural, spectroscopic and electrochemical studies. A.K. Dutta,* **S.K. Maji**, S. Dutta. *J. Mol. Struc.*, 1027 (2012) 87 – 91. **IF = 3.8**

C. Contributing Publications:

1. Sophisticated Plasmon-enhanced Photo-Nanozyme for Anti-angiogenic and Tumor-Microenvironment-Responsive Combinatorial Photodynamic and Photothermal Cancer Therapy. S. Yu, D. Jang, **S.K. Maji**, K. Chung, J. S. Lee, F. M. Mota, J. Wang, S. Kim, D. H. Kim. *J. Ind. Eng. Chem.* 104 (2021) 106 – 116. **IF = 6.1**
2. Observation of enhanced photocurrent response in M-CuInS₂ (M = Au, Ag) hetero-nanostructures: phase selective synthesis and application. A. Ghosh, N. Saha, A. Sarkar, A.K. Dutta, **S.K. Maji**, B. Adhikary. *New J. Chem.* 41 (2017) 692 – 701. **IF = 3.3**
3. Three-photon excited luminescence from unsymmetrical cyanostilbene aggregates: Morphology tuning and targeted bio-imaging. A.K. Mandal, S. Sreejith, T. He, **S.K. Maji**, X.-J. Wang, J. Joseph, Y. Li, H.D. Sun, Y. Zhao. *ACS. Nano*, 9 (2015) 4796–4805. **IF = 17.1**
4. A three-photon probe with dual emission colours for imaging of zinc(II) ion in living cells. A.K. Mandal, T. He, **S.K. Maji**, H.D. Sun, Y. Zhao. *Chem. Commun.*, 50 (2014) 14378-14381. **IF = 4.9**
5. A ratiometric fluorescent molecular probe with enhanced two-photon response upon Zn²⁺ binding for *in vitro* and *in vivo* bioimaging. K.P. Divya, S. Sreejith, P. Ashokkumar, K. Yuzhan, Q. Peng, **S.K. Maji**, Y. Tong, H. Yu, Y. Zhao, P. Ramamurthy, A. Ajayaghosh. *Chem. Sci.*, 5 (2014) 3469-3474. **IF = 8.4**
6. Single source precursor approach to the synthesis of Bi₂S₃ nanoparticles: A new amperometric hydrogen peroxide biosensor. A.K. Dutta, **S.K. Maji**, K. Mitra, A. Sarkar, N. Saha, A.B. Ghosha, B. Adhikary. *Sensor Actuat. B: Chem.*, 192 (2014) 578 – 585. **IF = 8.4**
7. γ-Fe₂O₃ nanoparticles: An easily recoverable effective photo-catalyst for the degradation of rose bengal and methylene blue dyes in the waste-water treatment plant. A.K. Dutta, **S.K. Maji**, B. Adhikary. *Mater. Res. Bull.*, 49 (2014) 28 – 34. **IF = 5.4**
8. Macrocyclic lanthanide(III) complexes of iminophenol Schiff bases and carboxylate anions: Synthesis, structures and luminescence properties. P. Bag, **S.K. Maji**, P. Biswas, U. Flörke, K. Nag. *Polyhedron*, 52 (2013) 976 – 985. **IF = 2.6**
9. New peroxidase–substrate 3,5–di–tert–butylcatechol for colorimetric determination of blood glucose in presence of Prussian Blue-modified iron oxide nanoparticles. A.K. Dutta, **S.K. Maji**, P. Biswas, B. Adhikary. *Sensor. Actuat. B: Chem.*, 177 (2013) 676 – 683. **IF = 8.4**

10. Visible-light-driven synthesis of 2-substituted benzothiazoles using CdS nanosphere as heterogenous recyclable catalyst. S. Das, S. Samanta, **S.K. Maji**, A.K. Dutta, P.K. Samanta, D.N. Srivastava, B. Adhikary, P. Biswas. *Tett. Let.* **54** (2013) 1090 – 1096. **IF = 1.8**
11. Cathodic and anodic deposition of FeS₂ thin films and their application in electrochemical reduction and amperometric sensing of H₂O₂. B. Chakraborty, B. Show, S. Jana, B.C. Mitra, **S.K. Maji**, B. Adhikary, N. Mukherjee, A. Mondal. *Electrochem. Acta* **94** (2013) 7-15. **IF = 6.6**
12. Synthesis of FeS and FeSe nanoparticles from a single source precursor: A study of their photocatalytic activity, peroxidase-like behavior and electrochemical sensing of H₂O₂. A.K. Dutta, **S.K. Maji**, D.N. Srivastava, A. Mondal, P. Biswas, P. Paul, B. Adhikary. *ACS Appl. Mate. Interfaces*, **4** (2012) 1919 – 1927. **IF = 9.5**
13. Peroxidase-like activity and amperometric sensing of hydrogen peroxide by Fe₂O₃ and Prussian Blue-modified Fe₂O₃ nanoparticles. A.K. Dutta, **S.K. Maji**, D.N. Srivastava, A. Mondal, P. Biswas, P. Paul, B. Adhikary. *J. Mol. Cat. A: Chem.*, **360** (2012) 71 – 77. **IF = 4.6**
14. Iron selenide thin film: Peroxidase-like behavior, glucose detection and amperometric sensing of hydrogen peroxide. A.K. Dutta, **S.K. Maji**, D.N. Srivastava, A. Mondal, B. Karmakar, P. Biswas, B. Adhikary. *Sensor. Actuat. B: Chem.*, **173** (2012) 724 – 731. **IF = 8.4**
15. Synthesis, crystal structural, spectroscopic, redox and magnetic properties of oxo- and carboxylato-bridged polynuclear iron(III) complexes with phenolate- and pyridine-substituted benzimidazole ligands. A.K. Dutta, **S.K. Maji**, S. Dutta, C.R. Lucas, B. Adhikary. *Polyhedron*, **44** (2012) 34 – 43. **IF = 2.6**
16. Synthesis, structural and magnetic properties of oxo-, chloroacetato-bridged tetra-nuclear iron(III) complex. A.K. Dutta, **S.K. Maji**, S. Dutta, C.R. Lucas, B. Adhikary. *J. Mol. Stru.*, **1029** (2012) 68 – 74. **IF = 3.8**
17. Fixation of carbon dioxide by macrocyclic lanthanide(III) complexes under neutral condition producing self-assembled trimeric carbonato-bridged compounds with $\mu_3\text{-}\eta^2\text{:}\eta^2\text{:}\eta^2$ bonding. P. Bag, S. Dutta, P. Biswas, **S.K. Maji**, U. Flörke, K. Nag. *Dalton Trans.*, **41** (2012) 3414 – 3423. **IF = 4.0**
18. CuO nano-whiskers: Electrodeposition, Raman analysis, photoluminescence study and photocatalytic activity. N. Mukherjee, B. Show, **S.K. Maji**, U. Madhu, S.K. Bhar, B. C. Mitra, G.G. Khan, A. Mondal. *Matter. Lett.*, **65** (2011) 3248 – 3250. **IF = 3.0**
19. Synthesis of nanocrystalline iron oxide ultrathin films by thermal decomposition of iron nitropruside: Structural and optical properties. S.K. Bhar, N. Mukherjee, **S.K. Maji**, B. Adhikary, A. Mondal. *Mater. Res. Bull.*, **45** (2010) 1948 – 1953. **IF = 5.4**

POSTER PRESENTATION & SYMPOSIUM

1. International Conference on **Molecular Matter – Emerging Direction for Sustainability** held on 16-18 December 2023, IIT Madras.
2. State Level Webinar on **Advances in Fishery: Induced Breeding and Aquafeed** held on 18 September, 2021, Bankura Christian College, WB, India.
3. State Level Workshop on Career Advancement Scheme for College Teacher held on 27 August, 2021, Krishnagar Women's College, WB, India.
4. **Korean Society of Industrial and Engineering Chemistry (KSIEC)** spring meeting held on May 2018, Daegu, South Korea.
5. The **25th Korean Conference on Semiconductor** held on February 2018, South Korea.

6. Science Academies' Lecture Workshop on **Emerging Trends in Chemistry** held on February 2017, Department of Chemistry, Saldiha College, West Bengal, India.
7. UGC sponsored National Seminar on **Chemistry on Its Way: Impact on the Environment** held on September 2016, Department of Chemistry, Saldiha College, Bankura, West Bengal, India.
8. Seminar on **Socio-Environmental Hazards: Threats & Therapy** held on August, 2016, National Service Scheme, Khatra Adibasi Mahavidyalay, Khatra, West Bengal, India.
9. Upconversion nanoparticles as a contrast agent for photoacoustic imaging in live mice. **S.K. Maji**, S. Sreejith, J. Joseph, M. Lin, T. He, T. Yan, H.D. Sun, S. W. Yu, Y. L. Zhao. **Poster presentation** at UGC-SAP Sponsored National Symposium on **Recent Advances in Chemistry Research (RACR-2016)** on March, 2016, Department of Chemistry, Visva-Bharati University, Santiniketan, West Bengal, India.
10. State Level Seminar on **History of Mathematics** held on October 2015, Department of Mathematics, Khatra Adibasi Mahavidyalay, Khatra, West Bengal, India.
11. National seminar on **Swadhinata-Uttar Bangla Kabitay Pratibadi Chetana** held on September 2015, Department of Bengali, Khatra Adibasi Mahavidyalay, Khatra, West Bengal, India.
12. Gold nanoparticles immobilized over mesoporous silica covered graphene oxide: A new generation hybrid material for peroxide biosensing and cancer cell detection. **S.K. Maji**, S. Sreejith, A.K. Mandal, X. Ma, Y. Zhao. **Poster presentation** at **9th International Symposium on Macrocyclic and Supramolecular Chemistry (9-ISMSC)** on June, 2014, Shanghai Institute of Organic Chemistry (SIOC), Shanghai, China.
13. FeS NPs as photocatalyst, electro-catalyst and mimic peroxidase for biocatalysis. **S.K. Maji**, A.K. Dutta, P. Biswas, N. Srivastava, P. Paul, A. Mondal, B. Adhikary, **Poster presentation** at **Recent Advances in Selected Topics of Chemistry-II** national seminar held on March, 2011, Department of Chemistry, Indian Institute of Engineering Science and Technology, Shibpur, West Bengal, India.
14. International symposium on **Facets of Weak Interaction** in Chemistry held on January 2011, Department of Chemistry, University of Calcutta, Kolkata, West Bengal, India.
15. International symposium on **Frontiers in Inorganic Chemistry** held on December 2010, Department of Inorganic Chemistry, Indian Association for the Cultivation of Science, Kolkata, West Bengal, India.
16. 8th Symposium by Chemical Research Society of India on **Advance in Chemical Research** held on August 2010, Department of Chemistry, Indian Institute of Engineering Science and Technology, Shibpur, West Bengal, India.
17. 7th Symposium by Chemical Research Society of India on **Current Trends of Chemical Research** held on August 2009, Department of Chemistry, Ramakrishna Mission Residential College (Autonomous), Narendrapur, Kolkata, west Bengal, India.
18. International symposium on **Frontiers of Functional Materials** held on December 2009, Department of Chemistry, University of Calcutta, Kolkata, West Bengal, India.

SERVICES AND ACTIVITIES

- **Journal Reviewer:** ACS Applied Nanomaterials, Acta Biomaterialia, Separation and Purification Technology, Chemical Engineering Journal, Colloids and Surface B: Biointerfaces, Materials and Design, Journal of Pharmaceutical Analysis, etc.