

CURRICULUMVITAE

Dr. Debasish Ghosh

C/O-Dr. Asit Baran Panda,
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**PERSONAL PROFILE:**

Name : Debasish Ghosh

Date of birth: 13-03-1989

Nationality/Sex/Marital status : Indian/Male/unmarried

Permanent address: Block-C/117, Sonari, Jamshedpur, Jharkhand

Academic Qualifications:

1. **Postdoc.** (Project Scientist): (Project title: -Development of large scale synthesis process for transition metal nano-composite based efficient and stable bifunctional electrocatalyst for anodic membrane alkaline water electrolyzer) (02/12/2021 to continue)
Mentor: Dr. Asit Baran Panda
2. **Ph.D.** (Area: Supramolecular Chemistry), Visva-Bharati University. (A Central University), Santiniketan-731235, India
Supervisor: Dr. Biswajit Dey
3. **M.Sc.** (Specialization in Inorganic Chemistry): Cooperative college Jamshedpur (Kolhan University, Jharkhand, India)
4. **B.Sc.** (Chemistry Honours): Karim city college, Jamshedpur, (Ranchi, University, Jharkhand, India)

Expertise Gained During Doctoral and Postdoctoral Study

Research skills: Design and synthesis of interesting and potentially important molecules with diverse functionalities, their purification using various techniques such as column chromatography, soxhlet extraction, recrystallization etc. Solvo thermal/mechanochemical synthesis of porous framework materials and their usage as organic catalyst and schottky barrier diode.

Postdoctoral Study:

Design and synthesis of size, shape and morphology selective inorganic /graphene / amorphous carbon based nanostructured materials for hydrogen generation process via electrolysis (alkaline, PEM,AEM),SOEC,etc.

Technical Skills:

Instrumentation: Surface Enhanced Raman Spectrometer (SERS), Single crystal XRD, NMR, XRD, XPS, Surface Area & Pore Size Analyzer, Cyclic Voltammogram, H₂ evolution set up, Hydrothermal Technique, Sonochemical technique.

Spectroscopy: UV-Vis-NIR spectrophotometry, Fluorimetry, Excited State Transient Absorption spectroscopy using Laser Flash Photolysis, Femtosecond Fluorescence up conversion, Time- Correlated Single Photon Counting Technique (TCSPC), Circular Dichroism (CD).

Microscopy: Raman microscopy and spectroscopy, TEM and SEM.

Electrochemical Technique: Linear sweep voltammetry (LSV), Differential Pulse Voltammetry (DPV), Square Wave Voltammetry (SWV), Chronoamperometry (CA), Chronopotentiometry (CP) Electrochemical Impedance Spectroscopy (EIS).

Photochemical Technique: A 200 ml capacity, three necked glass reactors centrally fitted with 125W high pressure Hg lamp under magnetic stirring condition with a constant water flow in the outer jacket of the glass reactor.

ConferencesAttended:

- Participationin “INTERNATIONAL CONFERENCE ON INOVATIVE APPLICATION OF CHEMISTRY IN PHAMACOLOGY & TECHNOLOGY” P.G. Department of chemistry, Berhampur University Bhanja Bihar, Odisha, India, 760007 on February 06-08,2015 (Poster).
- Participationin “RECENT TRENDS IN AGRICULTUREANDALLIED SCIENCES FOR BETTER TOMORROW (NSRTAS-2016)” Organized by the Department of Animal Science,Palli-SikshaBhavana(InstituteofAgriculture),Visva-Bharati,Sriniketan&TheSocietyof Bio-resource, Environment and Agricultural Research, Santiniketan, on December 4, 2016 (Poster)
- Participationin “SEMINAR ON RECENT TRENDS IN RESEARCH AND DEVELOPMENT OF SCIENCE” Organized by Department of Basic Science NSHM, Knowledge Campus, Durgapur, on February, 16th– 17th2017
- Participationin “NATIONAL SEMINAR ON EMERGING TRENDS IN CHEMISTRY (ETC-2017)” Organized by Department of Chemistry, Jadavpur University, Kolkata 700032, on February 15, 2017 (Poster)
- Participationin “INTERNATIONAL CONFERENCE ON EMERGING MATERIALS(ICEM 2017)” Organized by Department of Chemistry and Chemical Technology, Vidyasagar University Midnapore – 721102 on April 20-21, 2017

•Participation in “UGC– SAP SPONSORED NATIONAL SYMPOSIUM ON RECENT ADVANCES IN CHEMISTRY RESEARCH (RACR2016)” Organized by Department of Chemistry, Visva – Bharati, on March 04, 2016

•Participation in “NATIONAL SEMINAR ON CHEMISTRY OF FUNCTIONAL MATERIAL OF CURRENT INTEREST(CFMCI-2016)” Organized by Department of Chemistry, Jadavpur University, Kolkata 700032 on March 16, 2016 (Poster)

•Participation in “1st ANNUAL WORKSHOP ON CATALYSIS (WoC 2017)” Organized by Department of Applied Chemistry, Indian Institute of Technology (Indian School of Mines), Dhanbad, on 06-09, March 2017 (Participated and HAND ON experience on various techniques).

•Participation in “INTERNATIONAL CONFERENCE ON MOLECULAR SPECTROSCOPY (ICMS-2017)” Organised by International unit on Macromolecular Science and Engineering (IUMSE) Mahatma Gandhi University, Kottayam, Kerala, India.

•Participation in “SHORT DURATION LECTURE WORK SHOP ON RECENT TRENDS IN INTERDISCIPLINARY SCIENCE” Organized by Integrated Science Education and research Centre (ISERC) Siksha Bhavana Visva-Bharati, Santiniketan on February 12-14, 2018.

Research Publications:

1. Large-scale synthesis of porous Ce^{3+} ion Doped rGO-NiCo₂O₄ hollow spheres: A High-Performance Electrocatalyst for Overall Water Splitting, Debasish Ghosh and Asit Baran Panda*. (Submitted)
2. Bio-inspired Nickel-Iron based organogel: An efficient and stable bifunctional electrocatalyst for overall water splitting in high current density, Debasish Ghosh,* Sunil Kumar, Animesh Jana and Asit Baran Panda* (Submitted)
3. Enhanced electrocatalytic Overall Alkaline Water Splitting induced by Interfacial Electron Coupling of Mn₃O₄ Nano-Cube @ CeO₂ / γ -FeOOH Nanosheet hetero-structure, Debasish Ghosh, Dimple Bora and Asit Baran Panda, *J. Mater. Chem. A*, 2024, 12, 30783-30797.
4. γ -FeOOH Nanosheet with Enormous Cationic Defect: Efficient and Durable Bifunctional Electrocatalyst Suitable for an Industrial-Scale AEM Electrolyzer, Dimple K. Bora, Debasish Ghosh, Animesh Jana, Rajaram Krishna Nagarale and Asit Baran Panda* *ACS Appl. Eng. Mater.* 2024, 2, 975-987. (Dimple K. Bora & Debasish Ghosh Equal contribution)
5. Graphene oxide dispersed supramolecular hydrogel capped benign green silver nanoparticles for anticancer, antimicrobial, cell attachment and intracellular imaging applications, D. Ghosh, S. Dhibar, A. Dey, S. Mukherjee, N. Joardar, S.P. Sinha Babu, B. Dey*, *Journal of Molecular Liquids*, 2019, 282, 1-12. (Impact factor 5.065)
6. Selective detection of Triton X-100 based organogel media by a 1-D coordination polymer of Cu(II) in water: Fluorescence spectroscopic and microstructural

- investigations, S. Dhibar, D. Ghosh, A. Dey, R. K. Mondal, B. Dey*, *Journal of Molecular Liquids*, 2017, 241, 74-80. (Impact factor 5.065)
7. A Zn(II)-Coordination Polymer for the Instantaneous Cleavage of $C_{sp^3}-C_{sp^3}$ Bond and Simultaneous Reduction of Ketone to Alcohol, D. Ghosh, S. Dhibar, V. Gupta, G. K. Das, B. Dey*, *Inorg. Chem.*, 2020, 59, 5350-5356. (Impact factor 4.850)
 8. A Cu(II)-Inorganic Co-Crystal as a Versatile Catalyst Towards “Click” Chemistry for synthesis of 1,2,3-triazoles and β -hydroxy-1,2,3-triazoles, D. Ghosh, S. Dhibar, A. Dey, P. Manna, P. Mahata, and B. Dey*, *ChemistrySelect*, 2020, 5, 75-82. **(Impact factor 1.811)**
 9. A supramolecular Cd(II)-metallogel: an efficient semiconductive electronic device, S. Dhibar, A. Dey, S. Majumdar, D. Ghosh, A. Mandal, P. P. Ray and B. Dey*, *Dalton Trans.*, 2018, 47, 17412-17420. **(Impact factor 4.052)**
 10. Mechanically tuned molybdenum dichalcogenides (MoS_2 and $MoSe_2$) dispersed supramolecular hydrogel scaffolds, S. Dhibar, A. Dey, D. Ghosh, A. Mandal, B. Dey*, *ChemistrySelect*, 2019, 276, 184-193. **(Impact factor 5.065)**
 11. A Supramolecular Gel of Oxalic Acid-Monoethanolamine for Potential Schottky Barrier Diode Application, S. Dhibar, A. Dey, D. Ghosh, S. Majumdar, A. Dey, P. Mukherjee, A. Mandal, P. P. Ray, and B. Dey*, *ChemistrySelect*, 2019, 4, 1535-1541. (Impact factor 1.811)
 12. Triethylenetetramine-Based Semiconducting Fe(III) Metallogel: Effective Catalyst for Aryl-S Coupling, S. Dhibar, A. Dey, D. Ghosh, S. Majumdar, A. Dey, P. P. Ray, *and B. Dey* *ACS Omega*, 2020, 5, 2680-2689. **(Impact factor 2.87)**
 13. Development of Supramolecular Semiconducting Mn (II)-Metallogel Based Active Device with Substantial Carrier Diffusion Length, S. Dhibar, A. Dey, A. Dey, S. Majumdar, D. Ghosh, P. P. Ray, B. Dey* *ACS Applied Electronic Materials* 2020, 1, 1899-1908

Patent

- 1 B. Dey, D. Ghosh, S. Dhibar, “**Copper based Catalyst.**” (Indian patent application No-201731031013, dated-01.09.2017, Published 2019-03-08)

Honors and Awards:

- Qualified Council for Scientific and Industrial Research (CSIR) SRF Project fellow in India.
- 1st prize (oral presentation) Conference “Indian photobiology society international convention diamond jubilee” KIIT University & CSIR-IMMT, India 18-20 november 2023.

❖ Research/Scientific Skills:

- .Analytical skills: Experience in handling analytical instruments like FT-IR, Single Crystal

XRD, Wide angle XRD, TGA, Gas and Liquid Adsorption, UV- Visible Spectrophotometers, Spectrofluorometer, Glove box, Ball Mill, Extruder, High Speed Centrifuge, Stereo microscope, Cyclic Voltammeter, Probe Sonicator, PH meter.

- Instrumentation: Surface Enhanced Raman Spectrometer (SERS), XRD, XPS, Surface Area & Pore Size Analyzer, Nanofiber Electro spinning unit, Cyclic Voltammogram, H₂ evolution set up, Hydrothermal Technique, Sonochemical technique.
- Spectroscopy: UV-Vis-NIR spectrophotometry, Fluorimetry, Excited State Transient Absorption spectroscopy using Laser Flash Photolysis, Femtosecond Fluorescence up conversion, Time-Correlated Single Photon Counting Technique (TCSPC), Circular Dichroism (CD).
- Microscopy: Raman microscopy and spectroscopy, TEM and SEM.
- Electrochemical Technique: Differential Pulse Voltammetry (DPV), Square Wave Voltammetry (SWV), Chronoamperometry (CA), Electrochemical Impedance Spectroscopy (EIS).
- Photochemical Technique: A 200 ml capacity, three necked glass reactors centrally fitted with 125W high pressure Hg lamp under magnetic stirring condition with a constant water flow in the outer jacket of the glass reactor.

Computer skills: Adapt knowledge in using various MS Word, Power Point, Excel and other MS Office Programs, Chem-Draw, Paint, Origin, End-Note, Adobe group software's, Crystal Maker, Materials Studio, Mercury, Olex 2 and WinGX software for SCXRD data solving and X^{pert} HighScore plus for Powder XRD etc.

❖ **References**

❖ **Dr. Biswajit Dey (PhD Supervisor)**

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Department of Chemistry
Visva Bharati (A Central University)
West Bengal, India
Email: bdey@gmail.com

❖ **Dr. Aisit Baran Panda (Postdoc Mentor)**

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❖ **Dr. Trilochan Mishra**

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❖ **Dr. Pallav Bhattacharyya**

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