



Dr. Sourav Kanti Jana (Ph.D.)

Electrochemical Engineer | Materials Scientist | Nanotechnology | Researcher

+91 8250218245 /7501272685

www.souravjana.com

skj_ec@yahoo.co.in

Innovative Material Science and Nanotechnology expert targeting a senior role to drive advancements in electrochemical technology and nanomaterials, delivering sustainable solutions for energy and environmental challenges through impactful research.

PROFILE SUMMARY

- Dynamic Research Leader** with over 12 years of extensive experience in materials science and nanotechnology, driving innovative projects from conceptualization to execution, particularly in electrochemical sensors and energy devices.
- Innovative Product Developer**, credited with the design and implementation of portable electrochemical sensors for water quality monitoring, glucose and H₂O₂ sensing in human blood serum and smartphone-controlled potentiostat, demonstrating a commitment to translating scientific research into practical applications for community impact.
- Expert in Nanomaterials Development**, specializing in the synthesis and characterization of cutting-edge nanostructured materials, utilizing advanced techniques such as UV-Vis spectroscopy, photoluminescence, and atomic force microscopy to enhance device performance.
- Proficient Project Manager**, successfully coordinating interdisciplinary scientific projects with proven capabilities in data analysis and visualization using Microsoft Power BI, Origin, and Excel to inform decision-making and project outcomes.
- Accomplished Educator and Mentor**, having supervised numerous M.Sc. and Ph.D. students, fostering academic growth and promoting innovation in research methodologies related to nanotechnology and electrochemistry.
- Recognized Reviewer** for esteemed journals in materials science, contributing to the advancement of the field through rigorous peer review and critical analysis of contemporary research.

WORK EXPERIENCE

Senior Project Officer | IIT Madras | Dec'16 – June'24

Project Officer | T&M Services Consulting Pvt. Ltd. | Jul'24 - Sep'24

Research Scientist | IISER Kolkata | Jun'15 - Dec'16

Post-Doctoral Fellow | Saha Institute of Nuclear Physics | May'12 - Jun'15

Business Intelligence & Data Visualization

- Developed dynamic dashboards and interactive reports in Power BI, from basic charts to complex visuals like tree and heat maps.
- Skilled in data transformation, cleansing, and preparation for analysis in Power Query, with expertise in drill-through, drill-down, and natural language Q&A features for data exploration.
- Proficient in sharing dashboards via Power BI Service for collaborative insights across teams.

Scientific Research & Development

- Extensive research experience in Material Science and Nanotechnology, specializing in nanomaterial fabrication.
- Proficient in UV-Vis, reflection spectroscopy, photoluminescence, NT-MDT AFM, and photovoltaic characterization (Thermo Oriol, spectral response, EQE).
- 12+ years in electrochemistry and electrochemical technology; skilled in device design and scientific data analysis with Origin and Excel.
- Published scientific papers, filed patents, and presented findings internationally, coordinating interdisciplinary webinars (iC²IS 2022, 2023, 2024).

Product Development

- Developed water and desalination sensor technology for detecting metals like arsenic, chromium, and manganese.
- Created an Android-controlled potentiostat for electrochemical applications; skilled in product design using Arduino and Arduino IDE.

Project Management

- Managed scientific projects using Excel and Origin 2021 for data tracking and analysis, with comprehensive documentation in Word and presentations in PowerPoint.
- Proven ability to communicate research insights effectively to both technical and non-technical audiences.

CORE COMPETENCIES

- Nanotechnology Applications
- Electrochemical Sensor Development
- Photovoltaic Device Engineering
- Advanced Materials Characterization
- Environmental Monitoring Technologies
- Data Analysis and Interpretation
- Project Management
- Environmental Monitoring Techniques
- Scientific Research Methodologies
- Sensor Technology Development
- Real-Time Data Access
- Mobile Phone Operated Handheld Device Development

EDUCATION

- Ph.D. - Materials Science**
University of Milano Bicocca, Italy, 2012
- M.Tech. - Material Engineering**
Jadavpur University, India, 2008
- M.Sc. - Electronic Science**
Jadavpur University, India, 2003
- B.Sc. - Electronics**
Vidyasagar University, India, 2001

CERTIFICATIONS

- Microsoft Power BI Certified**, Skill Nation, 2023
- Advanced Microsoft Excel, SQL, Tableau** (Pursuing)

TRAINING

- Power Electronics Devices and Applications**, Advanced Training Institute for Electronics and Process Instrumentation, Ministry of Labour, Directorate General of Employment & Training, Govt. of India, Ramanthapur, Hyderabad

PERSONAL DETAILS

Date of Birth: 16th April, 1981

Present address: DST Unit of Nanoscience and Thematic Unit of Excellence, Pradeep Research Group, HSB 148, Department of Chemistry, IIT Madras, Chennai600036, Tamil Nadu, India

Languages: English, Hindi, and Bengali



PATENT APPLICATIONS

- **Pradeep, T., Islam, R., Sen Gupta, S., Srikrishnarka, P., & Jana, S. K.** (2020). *An Integrated CDI Electrode*. US Patent US20200331778A1 Application No. PCT/IN2018/050894, Publication No. WO 2019/130355 A1.
- **Pradeep, T., Jana, A., Jana, S. K., & Sarkar, D.** (2019). *Method for Generating Different Phases of Copper Sulphide Nanostructures using Electrospray Deposition (ESD) under Ambient Conditions*. Patent No. IN2019/41032379, filed 9 August 2019; granted 5 May 2022.
- **Pradeep, T., Jana, S. K., Chaudhari, K., & Islam, R.** (2021). *A point-of-care (POC) amperometric device for selective arsenic sensing*. Publication No. WO/2021/245689; Application No. PCT/IN2021/050496. US Patent Publication No. US /2023/0273151 A1.
- **Pradeep, T., Basuri, P., Jana, S. K., & Mondal, B.** (2021). *A method of ionization on a 2D-nanostructured surface*. Application No. 202141004464, filed 2 February 2021; granted 3 December 2021.
- **Pradeep, T., George, B., Srikrishnarka, P., Dashi, R. M., & Jana, S. K.** (2022). *Method of fabricating a conducting cloth based breath humidity sensor and applications thereof*. Application No. PCT/IN2023/050142, Publication No. WO/2023/157017.
- **Pradeep, T., Sarkar, D., Aswathi, K. S., Unni, K., Jana, S. K., Som, A., Chowdhury, S., Mukhopadhyay, S.** (2024). *Electrospray Deposited Anisotropic Alloy Catalysts for Efficient Nitrate Reduction in Wastewater*. Application No. 202441104803.



FELLOWSHIPS & AWARDS

- **National Scholarship** of Govt. of India for post graduate study, 30th July 2002
- **CORIMOV Fellowship**: Ph.D. program, University of Milano Bicocca, Milano, Italy.
- **Institute Fellowship**: Saha Institute of Nuclear Physics (SINP), India for Postdoctoral Position, May 2012 – 6 January 2015.
- **Institute Fellowship**: Indian Institute of Science Education and Research (IISER) Kolkata, Year: 2015.
- **Outstanding Reviewer**: Journal of Alloys and Compounds (Elsevier), July 2017.
- **Outstanding Reviewer**: Materials Letters (Elsevier), November 2016.
- **Recognized Reviewer**: Journal of Power Sources (Elsevier).
- **Recognized Reviewer**: ACS Publications reviewing activity



PROFESSIONAL AFFILIATIONS & JOURNAL MEMBERSHIPS

- **Member**: American Chemical Society (ACS).

Journal Affiliations:

- Reviewer for:
 - Nanoscale (Royal Society of Chemistry, RSC)
 - ACS Applied Materials and Interfaces (ACS)
 - Journal of Physical Chemistry C (ACS)
 - Physical Chemistry Chemical Physics (RSC)
 - Journal of Power Sources (Elsevier)
 - Materials Letters (Elsevier)
 - Journal of Alloys and Compounds (Elsevier)
 - Materials Research Express (Institute of Physics, IOP)



Research Experience

1. Fabrication of Nanostructured Thin Film Electrodes

- Development of low-cost, high-efficiency electrodes for capacitive desalination technology.
- Electrochemical sensor development for detecting water contaminants.
- Fabrication of thin-film and nanostructure-based chemical and gas sensors

2. Capacitive Deionization (CDI) Technology

- Synthesis of cost-effective electrode materials for scalable CDI applications.
- Design of photovoltaic-driven water kiosks incorporating CDI for sustainable water purification.

3. Surface and Interfacial Properties

- Analysis and optimization of surface and interfacial properties of nanomaterials through impedance spectroscopy for improved photoconductivity performance.

4. Energy Storage Device Development

- Synthesis of composite materials, including metal oxides, graphene, and chalcogenides, for advanced supercapacitors.

5. Solar Cell Device Fabrication and Light Harvesting

- Study of luminescent nanocrystals, dyes, and rare earth organic complexes for spectral conversion to optimize silicon-based solar cell performance.
- Research on solar energy materials and thin-film solar cells, focusing on CIGS and CIS photovoltaics.



EQUIPMENT PROFICIENCY

- **Thin Film Techniques**: Thermal evaporation, RF sputtering, spin coating
- **Electrochemical Analysis**: Electrochemical setups (Princeton Applied Research, CHI 660, Biologic, PalmSense), impedance spectroscopy
- **Material Characterization**: Conventional annealing, spectral response systems, UV/Vis spectroscopy
- **Optical Analysis**: Photoluminescence, Raman spectroscopy
- **Surface Analysis**: Atomic force microscopy (NT-MDT), contact angle measurement
- **Polymer Handling**: Experience with PMMA, PDDA, PVA, EVA for thin film preparation
- **Solar Simulation**: Thermo oriel solar simulator



CONFERENCE PRESENTATIONS & INVITED TALKS

- **Delivered final project talk for M. Tech** at Jadavpur University, India (2008)
- Presented renewal talks for Ph.D. at University of Milano-Bicocca, Italy (2009, 2010)
- Delivered final year presentation for Ph.D. at University of Milano-Bicocca, Italy (2011)
- Presented post-doctoral research talk at Saha Institute of Nuclear Physics, Kolkata, India (2012)
- Invited speaker at Indian Institute of Science Education and Research, Kolkata, India (2014)
- Invited speaker at DST Unit of Nanoscience and Thematic Unit of Excellence, Department of Chemistry, IIT Madras, Chennai, India (November 2016)
- Presented invited talk at the ICMST conference, St. Thomas College, Pala, Kottayam, India, on "Intercalated MoS₂ for AC Line Filtering Application" (June 2016)

Annexure 1 : RESEARCH PROJECTS MANAGED

Senior Project Officer

DST Unit of Nanoscience and Thematic Unit of Excellence, Department of Chemistry, IIT Madras, India

Duration: January 2015 – June 2024

Project Titles:

- Development of Portable Electrochemical Arsenic Sensor for Community-Scale Applications
- Development of Smartphone-Controlled Low-Cost Potentiostat for Electrochemical Applications

Senior Project Officer

DST Unit of Nanoscience & Thematic Unit of Excellence, Pradeep Research Group, IIT Madras, Chennai, India

1. Development of Portable Electrochemical Arsenic Sensor for Community Scale

- **Objective:** Create a specific, low-voltage amperometric sensor for arsenic detection in drinking water.
- **Key Achievements:**
 - Developed a sensor using reduced graphene oxide with a limit of detection (LOD) ≤ 10 ppb for highly selective arsenic detection in real-field water samples.
 - Immobilized arsenite oxidase on graphene electrodes to facilitate direct electron transfer for selective sensing.
 - Currently finalizing a prototype for field deployment.

2. Development of Smartphone-Controlled Low-Cost Potentiostat for Electrochemical Applications

- **Objective:** Design a pocket-sized potentiostat (PSTAT) for various electrochemical measurements, operable via a mobile app.
- **Key Achievements:**
 - Enabled basic measurements such as cyclic voltammetry (CV), chronoamperometry (CA), and linear sweep voltammetry (LSV).
 - Achieved current resolution in the microampere range; modifying circuits to enhance resolution to the nanoampere range.
 - Integrated Bluetooth connectivity for mobile operation.

Research Scientist (Senior Postdoctoral Fellow)

Chemical Science Division, Indian Institute of Science Education & Research (IISER), Kolkata, India

Duration: January 2015 – December 2016

Project Title:

- Development of Electrochemical Energy Generation and Storage Device Using Chalcogenide 2D Materials

Post-Doctoral Experience

Research Scientist (Senior Post-Doctoral Fellow)

Chemical Science Division, Indian Institute of Science Education & Research (IISER), Kolkata, India

Project Title: Development of Electrochemical Energy Generation and Storage using Chalcogenide 2D and Graphene Materials

- **Objectives:**
 - Develop synthetic methods to prepare MoS_2 with large interlayer spacing for enhanced electrochemical charge storage.
 - Investigate the interfacial electrochemical properties of graphene and graphene oxide junctions using electrochemical impedance spectroscopy (EIS).
 - Fabricate and characterize supercapacitor devices utilizing thin-film materials.
 - Study TiO_2 -based electrocatalysts for the electrochemical reduction of CO_2 under ambient conditions.

Postdoctoral Fellow

Surface Physics and Material Science Division, Saha Institute of Nuclear Physics, Kolkata, India

Duration: May 2012 – January 2015

Project Title:

- Study of Physical and Electrochemical Properties of Nanostructured Materials

Post-Doctoral Experience

Post-Doctoral Fellow

Surface Physics and Material Science Division, Saha Institute of Nuclear Physics (SINP), Kolkata, India

Project Title: Study of the Physical and Electrochemical Properties of Nanostructured Materials

- **Objectives:**
 - Design and fabricate metal nanoclusters incorporated into oxide nanostructures using cyclic voltammetry for supercapacitor applications.
 - Enhance photo-electrochemical water splitting efficiency through surface modification of TiO_2 -based nanostructured materials.
 - Investigate the optical properties of surface-modified oxide nanostructures.

Annexure 2 : JOURNAL PUBLICATIONS

Total citations: 708, h-index: 15, i10-index: 23

<https://scholar.google.co.in/citations?user=VDynLc8AAAAJ&hl=en>

1. "Cysteine-Protected Antibacterial Spheroids of Atomically Precise Copper Clusters for Direct and Affordable Arsenic Detection from Drinking Water", S. K. Jenifer, A. Jana, J. Raman, H. M. Veera, A. R. Kini, J. Roy, **S. K. Jana**, T. Thomas, T. Pradeep, **Environmental Science & Technology Letters**, 2024, **11 (8)**, 831-837.
2. "A Short Review of Li-ion Battery Materials: Recent Advancements and Research Gaps", **S. K. Jana**, **SD** 2024, **1 (1)**, 30-32.
3. "Photoconversion of Ag_{31} to Ag_{42} Initiated by Solvated Electrons", A. Jana, W. A. Dar, **S. K. Jana**, A. K. Poonia, V. Yadav, J. Roy, S. Chandra, K. N. V. D. Adarsh, R. H. Ras, T. Pradeep, **Chem. Mater.** 2023, **35**, 17, 7020-7031.

4. "Vertically Aligned Nanoplates of Atomically Precise Co_6S_8 Cluster for Practical Arsenic Sensing", A. Jose, A. Jana, T. Gupte, A. S. Nair, K. Unni, A. Nagar, A. R. Kini, B. K. Spoorthi, **S. K. Jana**, B. Pathak, and T. Pradeep, **ACS Materials Lett.** 2023, 5, 3, 893–899.
5. "Toward Continuous Breath Monitoring on a Mobile Phone Using a Frugal Conducting ClothBased Smart Mask", P. Srikrishnarka, R. M. Dasi, **S. K. Jana**, T. Ahuja, J. S. Kumar, A. Nagar, A. R. Kini, B. George, and T. Pradeep, **ACS Omega**, 2022, 7, 47, 42926–42938.
6. "Ion-Exchanging Graphenic Nanochannels for Macroscopic Osmotic Energy Harvesting", A. Nagar, Md R. Islam, K. Joshua, T. Gupte,; **S. K. Jana**, S. Manna, T. Thomas, T. Pradeep, **ACS Sustainable Chemistry and Engineering**, 2022, 10, 46, 15082–15093.
7. "A Selective and Practical Graphene-based Arsenite Sensor at 10 ppb", **S. K. Jana**, K. Chaudhari, Md R. Islam, G. Natarajan, T. Ahuja, A. Som, G. Paramasivam, A. Raghavendra, C. Sudhakar, T. Pradeep, **ACS Appl. Nano Mater.** 2022, 5, 8, 11876–11888
8. "Industrial Utilization of Capacitive Deionization Technology for the Removal of Fluoride and Toxic Metal Ions ($\text{As}^{3+}/^{5+}$ and Pb^{2+})", Md. R. Islam, S. S. Gupta, **S. K. Jana**, T. Pradeep, **Global Challenges**, 2022, 6, 2100129.
9. "2D-Molybdenum Disulfide-Derived Ion Source for Mass Spectrometry" P. Basuri, **S. K. Jana**, B. Mondal, T. Ahuja, K. Unni, Md R. Islam, S. Das, J. Chakrabarti, T. Pradeep, **ACS Nano**, 2021, 15, 5023–5031. *This article appeared in C & En News, <https://cen.acs.org/analyticalchemistry/mass-spectrometry/ionization-source-mass-spectrometry-needs/99/i7>*
10. "A covalently integrated reduced graphene oxide-ion exchange resin electrode for efficient capacitive deionization", Md R. Islam, S. Sen Gupta, **S. K. Jana**, P. Srikrishnarka, B. Mondal, S. Chennu, T. Ahuja, A. Chakraborty, T. Pradeep*, **Advanced Materials Interfaces**, 2021, 8, 2001998.
11. "Microdroplet impact-induced spray ionization mass spectrometry (MISI MS) for online reaction monitoring and bacteria discrimination", P. Basuri, S. Das, S. K. Jenifer, **S. K. Jana**, Thalappil Pradeep, **Journal of the American Society for Mass Spectrometry**, 2021, 32, 355-363.
12. "Arsenic toxicity: Carbonate's Counteraction Revealed", S. J. Ravindran, S. K Jenifer, J. Balasubramanyam, **S. K. Jana**, S. Krishnakumar, S. Elchuri, L. Philip, T. Pradeep, **ACS Sustainable Chemistry & Engineering**, 2020, 8, 5067-5075.
13. "Ionic liquid intercalated metallic MoS_2 as a superior electrode for energy storage applications", H. R. Inta, T. Biswas, S. Ghosh, R. Kumar, **S. K. Jana**, V. Mahalingam, **ChemNanoMat**, 2020, 6 (4), 685-695.
14. "Enhancing the sensitivity of point-of-use electrochemical microfluidic sensors by ion concentration polarisation – A case study on arsenic", V. Subramanian, S. Lee, S. Jena, **S. K. Jana**, D. Ray, S. J. Kim, T. Pradeep, **Sensors and Actuators B: Chemical**, 2020, 304, 127340-8.
15. "In-situ Monitoring of Electrochemical Reactions Through CNTs-assisted Paper Cell Mass Spectrometry", R. Narayan†, P. Basuri†, **S. K. Jana**, A. Mahendranath, S. Bose, T. Pradeep, **Analyst**, 2019, 144, 5404-5412.
16. "Highly-sensitive As^{3+} detection using electrodeposited nanostructured MnO_x and phase evolution of the active material during sensing", T. Gupte†, **S. K. Jana**†, J. Mohanty, P. Srikrishnarka, S. Mukherjee, T. Ahuja, C. Sudhakar, T. Thomas, T. Pradeep, **ACS Applied Materials & Interfaces**, 2019, 11, 28154-28163.
17. "Surface-Treated Nanofibers as High Current Yielding Breath Humidity Sensors for Wearable Electronics", S. A. Iyengar†, P. Srikrishnarka†, **S. K. Jana**, M. R. Islam, T. Ahuja, J. S. Mohanty, and T. Pradeep, **ACS Appl. Electron. Mater.** 2019, 1, 951–960.
18. "Electrospray deposition-induced ambient phase transition in copper sulphide nanostructures", A. Jana, **S. K. Jana**, D. Sarkar, T. Ahuja, P. Basuri, B. Mondal, S. Bose, J. Ghosh and T. Pradeep, **Journal Materials Chemistry A**, 2019, 7 6387. (*This article is part of the themed collection: 2019 Journal of Materials Chemistry A HOT Papers*)
19. "An alternative electron transfer process for selective detection of glucose in blood serum", B. Saha, **S. K. Jana***, S. Majumder, S. Banerjee, **Sensors and Actuators B: Chemical**, 2019, 283, 116-123.
20. "Holey MoS_2 Nanosheets with Photocatalytic Metal Rich Edges by Ambient Electrospray Deposition for Solar Water Disinfection", D. Sarkar, B. Mondal, A. Som, Swathi J. R., **S. K. Jana**, C. K. Manju, T. Pradeep, **Global Challenges (Wiley)** 2018, 2, 1800052 (2-8). (*This article was considered as the Front Cover Page of the journal*)
21. "Rectification and amplification of ionic current in graphene/graphene oxide junction: An electrochemical diode and transistor", **S. K. Jana***, S. Banerjee, S. Bayan, H. R. Inta, and V. Mahalingam, **J. Phys. Chem. C**, 2018, 122 (21), pp 11378–11384. Highlighted in **Nature India**, <https://www.nature.com/articles/nindia.2018.124>
22. "Ligand sensitized strong luminescence from Eu^{3+} -doped LiYF_4 nanocrystals: A photon downshifting strategy to improve the Si solar cell efficiency", T. Samanta, **S. K. Jana**, Athma E. P, V. Mahalingam, **Dalton Transaction**, 2017, 46,9646-9653.
23. "Selective Growth of Co-electrodeposited Mn_2O_3 -Au Spherical Composite Network towards Enhanced Non-enzymatic Hydrogen Peroxide Sensing", B. Saha, **S. K. Jana***, S. Majumder, B. Satpati and S. Banerjee*, **Electrochimica Acta**, Vol. 174, 853-863, 2015.
24. "Fluorescence resonance energy transfer and surface plasmon resonance induced enhanced photoluminescence and photoconductivity property of Au-TiO₂ metal-semiconductor nanocomposite", S. Majumder†, **S. K. Jana***, K. Bagani, B. Satpati, S. Kumar, and S. Banerjee, **Optical Materials**, Vol. 40 (2015) 97-101.
25. "Structural and electrochemical analysis of a novel co-electrodeposited Mn_2O_3 -Au nanocomposite thin film", **S. K. Jana***, B. Saha, B. Satpati, S. Banerjee, **Dalton Transactions**, Vol.44 (2015), 9158-9169.
26. "Enhancement of photoluminescence emission and anomalous photoconductivity properties of Fe_3O_4 @ SiO_2 core-shell microspheres", **S. K. Jana***, S. Majumder, S. Mishra, S. Banerjee, **RSC Advances**, Vol. 5 (2015), 37729-37736.
27. "Enhancement of supercapacitance property of electrochemically deposited MnO_2 thin films grown in acidic medium" **S. K. Jana***, V. P. Rao and S. Banerjee, **Chemical Physics Letters**, Vol. 593 (2014) 160-164.
28. "Enhanced photoelectrochemical property of gold nanoparticle sensitized TiO_2 nanotube: A crucial investigation at electrode-electrolyte interface", **S. K. Jana***, T. Majumder and S. Banerjee, **Journal of Electroanalytical Chemistry**, 727 (2014) 99–103.
29. "Optimized luminescence properties of Mn doped ZnS nanoparticles for photovoltaic applications", A. Le. Donne†, **S. K. Jana**†, S. Banerjee, S. Basu, and S. Binetti, **Journal of Applied Physics**, Vol. 113: 014903-5 (2013)

30. "Enhancement of silicon solar cell performances due to light trapping by colloidal metal nanoparticles", **S. K. Jana**, A. L. Donne and S. Binetti, **Journal of Physics and Chemistry of Solids**, Vol. 73(2): 143-147, (2012)
31. "Low temperature Methane Sensing by Electrochemically Grown Pd modified Zinc Oxide", P.K Basu, **S. K. Jana**, H. Saha and S. Basu, **Sensors and Actuators B**, Vol. 135: 81-88, (2008).
32. "Low-temperature hydrogen gas sensors based on electrochemically deposited and surface modified nanoporous ZnO thin films", P. K. Basu, **S. K. Jana**, M. K. Mitra, H. Saha and S. Basu, **Sensor Letters, American Scientific Publishers (ASP)**, Vol. 6(5): 699-704, (2008).
33. "Schottky Junction Methane Sensors Using Electrochemically Grown Nanocrystalline- Nanoporous ZnO Thin Films" P. K. Basu, N. Saha, **S. K. Jana**, H. Saha, A. Lloyd Spetz, and S. Basu, **Research article Hindawi Publishing Corporation, Journal of Sensors**, Vol. 2009, (2009).
34. "A Log Amplifier Based Linearization Scheme for Thermocouples", Nikhil Mondal, A. Abudhahir, **S. K. Jana**, Sugata Munshi and D. P. Bhattacharya, **Sensors & Transducers Journal**, Vol. 100: 1-10, (2009).
35. "3D dendritic α -Fe₂O₃ nano-architectures: Synthesis and its application on electrochemical non-enzymatic H₂O₂ sensing", Sumit Majumder, Barnamala Saha, Subhrajyoti Dey, Kousik Bagani, Mayukh Kumar Roy, **Sourav Kanti Jana**, Sanjay Kumar, Sangam Banerjee, **AIP Conf. Proc.**, **1665** (2015), 50117 (2 pages).
36. "Electrodeposited nanostructured MnO₂ for non-enzymatic hydrogen peroxide sensing", Barnamala Saha, **Sourav Kanti Jana**, Sangam Banerjee, **AIP Conf. Proc.**, **1665** (2015), 50097 (2 pages)
37. "Study of Electrochemical Reduced Graphene Oxide and MnO₂ Heterostructure for Supercapacitor Application", **S. K. Jana**, V. P. Rao and S. Banerjee, **AIP Conf. Proc.**, 1512, 516 (2013).
38. "Enhancement of Photoelectrochemical Properties of TiO₂ Nanotube Loaded With Gold Nanoparticles", **S. K. Jana**, T. Majumder, S. Majumder and S. Banerjee, **AIP Conf. Proc.**, 1536, 109 (2013).

N.B. †Authors have same contribution and * author is serving as the corresponding author

Annexure 3: CONFERENCE PROCEEDINGS

- **Jana, S. K., Chatti, M., Inta, H. R., & Mahalingam, V.** (2016). *Impedance spectroscopy probed electrochemical measurements on MoS₂ nanosheets for superior AC line filtering application.* Oral presentation at **ICMST'16**, 5-8 June 2016, Pala, Kerala, India.
- **Majumder, S., Saha, B., Dey, S., Bagani, K., Roy, M. K., Jana, S. K., Kumar, S., & Banerjee, S.** (2014). *3D dendritic α -Fe₂O₃ nano-architectures: Synthesis and its application on electrochemical non-enzymatic H₂O₂ sensing.* In **Proceedings of the 59th DAE Solid State Physics Symposium**, IIT Bombay.
- **Saha, B., Jana, S. K., & Banerjee, S.** (2014). *Electrodeposited nanostructured MnO₂ for non-enzymatic hydrogen peroxide sensing.* In **Proceedings of the 59th DAE Solid State Physics Symposium**, VIT University.
- **Jana, S. K., & Banerjee, S.** (2013). *UV assisted catalytic effect of electrochemically anodized TiO₂ nanotube for hydrogen generation.* Abstract presentation at **International Conference on Electron Microscopy and XXXIV Annual Meeting of the Electron Microscope Society of India (EMSI)**, 3-5 July 2013, Kolkata, India.
- **Saha, B., Jain, N., Jana, S. K., & Banerjee, S.** (2013). *Study of electrodeposited MnO₂ for hydrogen peroxide sensor.* Abstract presentation at **International Conference on Electron Microscopy and XXXIV Annual Meeting of the Electron Microscope Society of India (EMSI)**, 3-5 July 2013, Kolkata, India.
- **Jana, S. K., Rao, V. P., & Banerjee, S.** (2012). *Study of Electrochemical Reduced Graphene Oxide and MnO₂ Heterostructure for Supercapacitor Application.* In **DAE SSPS**, 3-7 December 2012, IIT Mumbai, India.
- **Jana, S. K., Majumder, T., Majumder, S., & Banerjee, S.** (2013). *Enhancement of Photoelectrochemical Properties of TiO₂ Nanotube Loaded With Gold Nanoparticles.* In **Recent Trends in Advanced Materials (RAM'2013)**, 1-2 February 2013, Bikaner, Rajasthan, India.
- **Basu, S., Jana, S. K., Basu, P. K., & Saha, H.** (2008). *Low Temperature Methane Detection Using Chemically Modified Nanoporous ZnO Thin Film Sensors.* In **12th International Meeting on Chemical Sensors (IMCS 12)**, 13-16 July 2008, Columbus, OH, USA.

Annexure 4: Academic Projects and Research Contributions

Ph.D. in Material Science and Nanotechnology

Thesis Title: *Light Harvesting Methods in Photovoltaic Devices with Some Superficial Treatments*

- Investigated methods to enhance the efficiency of silicon and Cu(In,Ga)Se₂ solar cells through surface plasmon scattering using metal nanoparticles (silver and gold), achieving up to 7.5% enhancement in short-circuit current.
- Developed spectral down-shifting techniques using Mn-doped ZnS quantum dots, resulting in a 6% and 17% enhancement in external quantum efficiency for silicon and Cu(In,Ga)Se₂ solar cells, respectively.

Master of Technology

Project Title: *Studies on Electrochemical Deposition and Surface Modification of Nanocrystalline-Nanoporous ZnO Thin Films for Gas Sensor Applications*

- Developed nanocrystalline ZnO thin films for methane and hydrogen sensors, achieving operational temperatures of 70°C and 50°C, with response times of ~4.5s and ~2.2s, respectively.

Master of Science

Project Title: *Simulation Studies of Log Amplifier-Based Lineariser of Thermocouples*

- Designed and simulated an analog linearization circuit for thermocouples using logarithmic amplification techniques, enhancing temperature measurement accuracy through PSPICE simulations.