

Debrina Jana

Personal Information

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PERMANENT ADDRESS: C/O Ram Prasad Jana, Vill.-Khlaore (South of Gopimohan School), P.O.-Bagnan, Dist.-Howrah, West Bengal, Pin 711303

PRESENT WORK STATUS: Assistant Professor of Chemistry at Gour Mohan Sachin Mandal Mahavidyalaya, West Bengal (affiliated to University of Calcutta) since October 2020.



Academic profile

September 2007- December 2012	PhD Work done in CSIR-Central Glass & Ceramic Research Institute Registered in Jadavpur University
August 2005- August 2007	M.Sc (Chemistry) University of Calcutta
May 2002- July 2005	B.Sc (Chemistry Honours) University of Calcutta
April 2000- April 2002	Higher Secondary West Bengal Council of Higher Secondary Education
March 2000	Secondary Exam West Bengal Board of Secondary Education

Teaching Experience

- Course instructor of the following courses in IISER Mohali (August 2016-October 2020):
 - i) Major course CHM402- Chemistry of Materials (2017-2019, three times)
 - ii) Core course CHM111-Chemistry lab course (2017, one time),
 - iii) Core course CHM 112 -Chemistry lab course (2018-2020, three times),
 - iv) Elective course IDC 305-Selected Analytical Techniques (2019, one time),
 - v) Major course CHM411-Physical Chemistry lab (2020, one time).
- Course instructor of the following courses in Gour Mohan Sachin Mandal Mahavidyalaya (under University of Calcutta) (October 2020-till date)
 - i) Physical Chemistry (Chemistry Honours and General),
 - ii) DSE courses

Research Experience

Sept. 2007- Dec. 2012	Research fellow Advisor: Prof. Goutam De, CSIR-Central Glass & Ceramic Research Institute, Kolkata, India PhD thesis title: Metal nanoparticles incorporated alumina sols and mesoporous coatings Research area: Metal nanoparticles incorporated mesoporous materials and their application as heterogeneous catalysts, shape conversion of nanoparticles
Feb. 2013- Feb. 2015	Postdoctoral research associate Advisor: Dr. Laura Sagle, University of Cincinnati, Ohio, United States Research area: Biosensing using plasmonic nanoparticles and cavity-mode SERS
March 2015- August 2016	Postdoctoral research associate Advisor: Dr. G. V. Pavan Kumar, IISER Pune, Pune, India Research area: Synthesis and optical characterization of plasmonic nano-architectures, with emphasis on SERS and fluorescence
August 2016- 2020	DST-INSPIRE Faculty Set up independent research lab 'Chemistry at nanoscale' in Indian Institute of Science Education and Research Mohali

Research Funding

DST-INSPIRE Faculty research grant of Rs. 35 lakhs (2016-2022)

Research area: Our 'Chemistry at nanoscale' group's research work mainly consists of synthesis of materials in nanoscale, investigating their property for optical, photocatalytic and photovoltaic applications. Our thrust areas are- mesoporous materials and nanocomposites, perovskite materials, controlled synthesis and assembly of metallic nanoparticles, estimation of optical enhancing properties of nanoparticle assemblies and coupled nanostructures. We are working to develop synthetic protocols for halide perovskite nanocrystals (both Pb and non Pb based) with improved stability which is beneficial for applications in optoelectronics and photovoltaics.

Skills and Technical Experience

Analytical Techniques: Grazing incidence X-ray diffractometer (GIXRD), Small Angle X-Ray Scattering (SAXS), X-ray reflectometry (XRR), Powder X-ray diffractometer (PXRD), Single Crystal X-ray Diffraction, Ultraviolet-Visible Spectroscopy (UV-Vis), Infrared Spectroscopy (FT-IR), Fluorescence Spectroscopy, Time-Correlated Single Photon Counting (TCSPC), , Circular Dichroism, Attenuated Total Reflectance (ATR), Atomic Absorption Spectroscopy (AAS), Mass spectrometry, Thermal gravimetric analysis, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM)

Software Skills: Material Studio, ChemDraw, Mercury Software, WinplotR, Mnova, Origin

Details of the participation in national and international conferences/workshop/ Seminar/Workshop/Training program

S. No	Name of the title of event (Conference/workshop/seminar/training program)	Place organized at	Date and Duration Of event	Title of paper presented
1	20th AGM of Materials Research Society of India	Materials Research Society of India	2009, 3 days	Synthesis of Au@Pd nanoparticles in alumina sols
2	12th CRSI National Symposium in Chemistry and 4th CRSI-RSC Symposium in Chemistry	Chemical Research Society of India	2010, 4 days	Anisotropic Au nanoparticles incorporated mesoporous boehmite films: an excellent reusable catalyst
3	International Symposium on Advances in Nanomaterials	CSIR-CGCRI	2010, 2 days	Shape conversion of silver nanoparticles in alumina sol
4	International Conference on Advanced Nanomaterials and Nanotechnology	IIT Guwahati	2011, 3 days	PVP assisted shape conversion of Ag nanoparticles in alumina sol and influence of shape on SERS
5	International Conference on Nano Science and Technology (ICONSAT 2012)	DST Nanomission Council and ARCI (Hyderabad)	2012, 3 days	High Raman enhancing shape-tunable Ag nanoparticles in alumina sol
6	Oesper Symposium, Cincinnati, USA	University of Cincinnati and ACS Cincinnati Section, USA	2013, 1 day	Probing The Inside Of Core-Shell Nanoparticles Using Surface Enhanced Raman Spectroscopy
7	246 th American Chemical Society meeting, USA	American Chemical Society, USA	2013, 5 days	Probing The Inside Of Core-Shell Nanoparticles Using Surface Enhanced Raman Spectroscopy
8	Pittcon Conference, Chicago, USA	The Pittsburgh Conference on Analytical Chemistry and Applied	2014, 5 days	Improved biosensing using capping agent free Au nanostars

		Spectroscopy, USA		
9	Gordon Conference on Noble Metal nanoparticles, Boston, MA, USA	Gordon Conference committee, USA	2014, 5 days	Improved biosensing utilizing LSPR of noble metal nanoparticles both in solution and on solid substrate
10	Oesper Symposium, Cincinnati, USA	University of Cincinnati and ACS Cincinnati Section, USA	2014, 1 day	Improved biosensing utilizing LSPR of noble metal nanoparticles both in solution and on solid substrate
11	International Discussion Meeting on Emerging Themes in Nanophotonics	Tata Institute of Fundamental Research- Mumbai	2015, 3 days	Plasmon mediated multipolar fluorescence emission from a single Au core-silica shell nanoparticle
12	International conference on science and technology (ICONSAT)	DST, Govt. of India	2016, 3 days	Plasmon mediated multipolar fluorescence emission from a single Au core-silica shell nanoparticle
13	International Symposium on Clusters, Cluster-Assemblies and nanomaterials (ISCAN 2016)	IISER- Thiruvananthapuram and Virginia commonwealth University	2016, 4 days	Plasmon mediated multipolar fluorescence emission from a single Au core-silica shell
14	Recent advances in nanostructures powders, films and devices	INST Mohali	2017, 2 days	Nanostructured films for functional applications: catalysis, biosensing and plasmonics
15	ICEFN 2019	Kumaun University	2019, 3 days	Synthesis of nanocrystals in mesoporous host
16	Faculty Induction Program	University of Calcutta	2022, 30 days	Successfully completed
17	<u>Training on X-ray Diffraction</u>	CSIR-Central Glass & Ceramic Research Institute	2008, 1 day	NA
18	A short course on Ellipsometry (<u>workshop</u>)	S. N. Bose Centre of basic Sciences	2008, 3 days	NA
19	<u>Workshop</u> on electron microscopy	CSIR-CGCRI	2 days	NA

Awards and Achievements

- 'Nanoscale Horizons' community board member (2020)
- INSPIRE Faculty award by DST, Govt. of India (2016)
- Postdoctoral Research fellowships from Indian Institute of Science Education and Research, Pune (2015) and University of Cincinnati, USA (2013).
- Best Poster Award in 2nd International Conference on Advanced Nanomaterials and Nanotechnology held on 8-10th December, 2011 at IIT Guwahati
- Best Poster Award in National Review and Coordination meeting (NSNT-2011) of NANO Mission Council, DST held on February 25-27, 2011 at IIT Delhi
- Best Poster Award in International conference on Advances in Nanomaterials held on 6-7th December, 2010 at CG&CRI, Kolkata
- Best Poster Award in 20th AGM of Materials Research Society of India held on 10-12th February, 2009 at Kolkata
- CSIR Research Fellowship
- Governor's proficiency certificate (2002) for standing first in Howrah district in Secondary examination.
- National Scholarship for standing first in Howrah district in Secondary examination (2002).

BS-MS project thesis guidance

	Name and graduation year	BS-MS Thesis title
1	Daimiota Takhellambam (2018)	Mesoporous Alumina Mediated Synthesis of Perovskite Nanocrystals and their Photophysical studies
2	Shikha Bhateja (2018)	Tuning the shape and Morphology of Pd Nanoparticles
3	Parth Raval (2019)	Synthesis of Pb-based And Pb Free Perovskite Systems
4	Tinku Ram Meena (2019)	Synthesis of plasmonic hollow nanoparticles
5	Isabella Antony (2019)	Investigating a new pathway for the generation of Mn doped CsPbCl ₃ perovskite nanocrystals
6	Ashitha P.P. (2020)	Halide Double Perovskites Cs ₄ CuSb ₂ Cl ₁₂ and Cs ₂ AgSbCl ₆ : Synthesis and Photocatalytic Application
7	Megha Dhiman (2020)	Shape Controlled Synthesis of Ag-Au core-shell and Pd Nanoparticles: Understanding their Potential in SERS and Catalysis
8	Dhanvin N. Koundinya (2020)	An attempt to synthesize 2D layered non-Pb halide double perovskite using organic spacer cations
9	Neha Bajaj (2021)	Lead halide perovskite and noble metal nanocomposites: synthesis and property
10	Akhilesh Meena (2021)	A study of Pb halide perovskite-chalcogenide core-shell structure
11	Deepraj Verma (2021)	Synthesis of 2D layered perovskite Cs ₄ CuSb ₂ Cl ₁₂ nanocrystal and their sunlight driven photocatalysis reaction

12	Abhinil Ghosal (2021)	Amino acid mediated synthesis of different structural gold nanoparticles
13	Saumya Sebastian (2021)	Optical and structural effects of copper doping on 2D layered (BA) ₂ PbCl ₄ perovskite
