

SANDEEP GHOSH

McKetta Department of Chemical Engineering, The University of Texas at Austin, Austin, Texas 78712 +15127726607 sandeep.ghosh@utexas.edu
Homepage <http://nanocrystal.che.utexas.edu> Google scholar: <https://goo.gl/6JQ44U> LinkedIn: <https://www.linkedin.com/in/sandeepghosh83>

Materials scientist specialized in structure – physical property correlation of nanoscale materials and designing their end-use.

Work Experience

THE UNIVERSITY OF TEXAS AT AUSTIN, AUSTIN, TEXAS

Feb 2017 – Present

Postdoctoral researcher

- Functional semiconductor nanocrystal plasmonics for electrochromics

ISTITUTO ITALIANO DI TECNOLOGIA, GENOA, ITALY

June 2012 – Dec 2016

Postdoctoral researcher

- Colloidal semiconducting nanomaterials for energy, catalysis & nanomedicine & their optical and structural studies

INDIAN INSTITUTE OF SCIENCE, BANGALORE, INDIA

Jan 2011 – Jan 2012

Research associate

- Spectroscopy of carbon nanomaterials (CNT and graphene)
-

Education

INDIAN INSTITUTE OF SCIENCE (CHEMICAL SCIENCES DIVISION), BANGALORE, INDIA

Oct 2007 – June 2011

PhD (Doctor of Philosophy) in Chemistry

- Inorganic/carbon nanostructures and their properties, plasmonics in ReO_3 nanocrystals and core-shell analogues
- Charge transfer interactions in graphene and carbon nanotubes

NATIONAL INSTITUTE FOR MATERIALS SCIENCE, TSUKUBA, JAPAN

Feb 2009 – Dec 2009

IJGS (International Joint Graduate School) fellow (part of doctoral school)

- Ultrathin polymer films for separation membranes (3 granted patents).

INDIAN INSTITUTE OF SCIENCE (CHEMICAL SCIENCES DIVISION), BANGALORE, INDIA

Aug 2004 – Sept 2007

MS (Master of Science) in Chemistry

- Synthesis of metal and semiconductor nanostructures (Ni, Ru, Ir, ReO_3 , TiO_2 , ZnO etc)
- Subjects - electronic properties of solids, solid state chemistry, symmetry and structure of the solid state, electrochemistry, polymer chemistry, molecular spectroscopy, quantum chemistry and statistical mechanics, electronics for chemists (plus inorganic, organic and physical chemistry)

JADAVPUR UNIVERSITY (CHEMISTRY DEPARTMENT), KOLKATA, INDIA

Aug 2001 – May 2004

BSc (Bachelor of Science) in Chemistry

- Major in Chemistry (Inorganic, Physical and Organic), Subsidiary subjects: Physics and Mathematics
-

Skills

TECHNICAL

- Wet chemical synthesis strategies (colloidal techniques through Schlenk line and Glove box, solvothermal etc)
- Nanocrystal film fabrication and their optical and electrical measurements
- CNT and graphene growth through arc-discharge, solid state methods (CVD, thermal evaporation and sputtering)
- Thermoelectric (TE) characterization, Electrocatalysis (HER) & Electrochemistry, Photothermal (PT) therapy
- Fabrication of polymer films and analysis, Separation membranes, Nanocrystal-polymer composites
- Spectroscopy – UV-Vis-NIR, Fluorescence, NMR (1D, 2D, solid state), FTIR, Raman

- Electron microscopy (TEM, SEM, SAED, EDX), scanning probe microscopy (STM, AFM),
- X-ray methods: diffraction (XRD), small-angle X-ray scattering (SAXS), absorption (XAS, RIXS), emission (XPS)

COMMUNICATION AND MANAGERIAL ASPECTS

- Adept in presenting to large audiences – 10 oral and 12 poster presentations in different scientific conferences
- Team work- through prolific collaboration for my interdisciplinary research, comfortable in multi-cultural teams
- Mentoring – Undergrads (2, in UT Austin), PhD students (2, in IIT, Italy), laboratory supervisor (during PhD, India)
- Referee for international peer-reviewed journals – J Am Chem Soc, ChemComm, J Mater Chem, etc.
- Languages: English (proficient), Bengali, Hindi, Italian (elementary).

OTHERS

- Self-starter, innovative, independent thinking, result-oriented, networking, pro-active, problem solving, dedicated.

Additional Information

ISSUED PATENTS

- Filter and method for producing the same. [JP 5586029 B2](#) Izumi Ichinose, Xinsheng Peng, **Sandeep Ghosh** and Qifeng Wang. Japan (Issued on Sept 10, 2014)
- Process for fabricating membrane filters, and membrane filters. [US 9289727 B2](#) Izumi Ichinose, Xinsheng Peng, **Sandeep Ghosh** and Qifeng Wang. United States (Issued on March 22, 2016)
- Filter and method for producing the same. [EP 2463018 A4](#) Izumi Ichinose, Xinsheng Peng, **Sandeep Ghosh** and Qifeng Wang. European Union (Issued on Nov 4, 2015)

JOURNAL PUBLICATIONS – SELECTED (19 in total- full list here: https://www.researchgate.net/profile/Sandeep_Ghosh)

- [Localized Surface Plasmon Resonance in Semiconductor Nanocrystals](#). *Chem. Rev.* (2018 – DOI: 10.1021/acs.chemrev.7b00613)
- [Quasi-Static Resonances in the Visible Spectrum from All-Dielectric Intermediate Band Semiconductor Nanocrystals](#). *Nano Lett.* 17 (12), 7691–7695 (2017).
- [Colloidal Monolayer \$\beta\$ - \$\text{In}_2\text{Se}_3\$ Nanosheets with High Photoresponsivity](#). *J. Am. Chem. Soc.* 139 (8), 3005–3011 (2017).
- [Colloidal \$\text{CuFeS}_2\$ Nanocrystals: Intermediate Fe d-Band Leads to High Photothermal Conversion Efficiency](#). *Chem. Mater.* 28 (13), 4848–4858 (2016).
- [Effect of nanoscale size and medium on metal work function in oleylamine-capped gold nanocrystals](#). *J. Phys. Chem. Solids* 89, 7-14 (2016).
- [\$\text{Cu}_2\text{Se}\$ and Cu Nanocrystals as Local Sources of Copper in Thermally Activated *In Situ* Cation Exchange](#). *ACS Nano*, 10 (2), 2406–2414 (2016).
- [Pyramid-Shaped Wurtzite CdSe Nanocrystals with Inverted Polarity](#). *ACS Nano* 9 (8), 8537–8546 (2015).
- [Selective Cation Exchange in the Core Region of \$\text{Cu}_{2-x}\text{Se}/\text{Cu}_{2-x}\text{S}\$ Core/Shell Nanocrystals](#). *J. Am. Chem. Soc.* 137 (38), 12195–12198 (2015).
- [Hollow and Concave Nanoparticles via Preferential Oxidation of the Core in Colloidal Core/Shell Nanoparticles](#). *J. Am. Chem. Soc.* **136**, 9061–9069 (2014).
- [Copper Sulfide Nanocrystals with Tunable Composition by Reduction of Covellite Nanocrystals with \$\text{Cu}^+\$ ions](#). *J. Am. Chem. Soc.* **135** (46), 17630–17637 (2013).
- [Ultrathin free-standing nanoporous membranes prepared from polystyrene nanoparticles](#). *J. Mater. Chem.* **21**, 1684–1688 (2011).
- [The Interaction of Halogen Molecules with SWNTs and Graphene](#). *RSC Adv.* **2**, 1181–1188 (2012).
- [Scaling behavior of Plasmon coupling in Au and \$\text{ReO}_3\$ Nanoparticles incorporated in Polymer Matrices](#). *physica status solidi (RRL) – Rapid Research Letters*, **4** (7), 169–171 (2010).
- [New Strategies for the Enrichment of Metallic Single-Walled Carbon Nanotubes](#). *J. Nanosci. Nanotechnol.* 10, 4102–4108 (2010).
- [Selectivity in the Interaction of Electron Donor and Acceptor Molecules with Graphene and Single-Walled Carbon Nanotubes](#). *J. Phys. Chem. C*, **113** (39), 16855–16859 (2009).

- Stable Dispersions of Metal Oxide Nanowires and Nanoparticles in Water, Dimethylformamide and Toluene. *J. Nanosci. Nanotechnol.* 9, 5214-5222 (2009).
- Separation of Metallic and Semiconducting Single-Walled Carbon Nanotubes Through Fluorous Chemistry. *Nano Res.*, **2** (3), 183-191 (2009).
- Nanocrystals, Nanorods and other Nanostructures of Nickel, Ruthenium, Rhodium and Iridium prepared by a Simple Solvothermal Procedure. *J. Cluster Sci.* 18, 97-111 (2007).
- Core-shell nanoparticles based on an oxide metal: $\text{ReO}_3@Au$ (Ag) and $\text{ReO}_3@SiO_2$ (TiO_2). *J. Mater. Chem.*, **17**(23), 2412- 2417 (2007).

CONFERENCE PRESENTATIONS – SELECTED

- Colloidal Chalcopyrite ($CuFeS_2$) Nanocrystals for Photothermal Therapy. MRS meeting, Phoenix, March 28- April 1 (2016).
- Pyramid-shaped Wurtzite CdSe Nanocrystals Exhibiting Inverted Crystal Polarity. ANNIC, Paris, France, November (2015).
- Solving the Challenges of Collaborative Research. First Hope Meeting, Tsukuba, Japan, Feb (2008)

GRANTS AND AWARDS

- International Joint Graduate School Fellowship, National Institute of Materials Science, Japan (2009)
 - Junior research fellowship, awarded through University Grants Commission (UGC), India (2006).
-