

CURRICULUM VITAE

Dr. Debraj Dhar Purkayastha

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Educational Qualification

- **April 2008-December 2014:** Doctor of Philosophy in Chemistry, Assam University, Silchar.

Ph.D. Thesis Title: “Novel and Simpler Approaches to the Synthesis of Transition Metal Oxide Nanomaterials”.

- **2005:** M.Sc. Chemistry (1st Class, 67.81%), Assam University, Silchar.
- **2003:** B.Sc. with Chemistry Honours (1st Class, 65.25%), Cachar College, Silchar.

Research Interests

- Chemical synthesis of mesoporous materials.
- Chemical synthesis of transition metal/metal oxide and mixed metal oxide nanomaterials.
- Biosynthesis of gold and silver nanoparticles.
- Chemical synthesis of metal containing liquid crystals.

Instrumental Skills

- Expertise in handling Shimadzu Varian 4300 FT-IR spectrometer.
- Expertise in handling Perkin Elmer Pyris Diamond thermal analyzer.
- Expertise in handling Shimadzu 1601 PC UV-visible scanning spectrophotometer.
- Expertise in handling Shimadzu RF-5301 PC spectrofluorophotometer.
- Expertise in handling Bruker AXS D8-Advance powder X-ray diffractometer.
- Expertise in handling JEOL, JEM2100 transmission electron microscope.
- Expertise in handling Delsa Nano S particle size analyser.

Experience

- 1 year experience as Assistant Manager-Regulatory Affairs. Experienced in making dossiers for pesticide registration.
- 9 months experience as Research Associate in DST-UKIERI project entitled 'Multifunctional hybrid nanocomposites for the separation of toxic and microbial contaminants from water', Department of Materials Science, IACS, Kolkata.
- 1 year 9 months experience as Assistant Professor in Chemistry, Anundoram Borooah Academy, Degree College, Pathsala, Assam.
- 1 year 8 months experience as Guest Lecturer in Chemistry, Cachar College, Silchar.
- Actively involved with 10 M.Sc. (Chemistry) students during their 4th Semester project work.
- Reviewed research papers of Elsevier journals like Applied Surface Science, Solid State Sciences, Fuel, ACS journals like ACS Omega, Industrial and Engineering Chemistry Research and some of the Springer and Taylor and Francis journals.

Fellowships

- JRF and SRF under UGC Research Fellowship Scheme for Meritorious Students (RFSMS).

- RA-I in a DST-UKIERI project in Department of Materials Science, Indian Association for the Cultivation of Science (IACS), Kolkata.

List of Research Publications

- [1] C.R. Bhattacharjee, **D.D. Purkayastha**, J.R. Chetia, ‘Surfactant assisted low-temperature thermal decomposition route to spherical NiO nanoparticles’, *J. Coord. Chem.*, 2011, **64**, 4434-4442. (Impact factor: 1.547), ISSN No. 0095-8972
- [2] C.R. Bhattacharjee, **D.D. Purkayastha**, N. Das, ‘Surfactant mediated low temperature thermal decomposition route to zinc oxide nanocrystals’, *Mater. Lett.*, 2012, **86**, 108-111. (Impact factor: 2.224), ISSN No. 0167-577X
- [3] C.R. Bhattacharjee, **D.D. Purkayastha**, N. Das, ‘Surfactant-free thermal decomposition route to phase pure tricobalt tetraoxide nanoparticles from cobalt(II)-tartrate complex’, *J. Sol-Gel. Sci. Technol.*, 2013, **65**, 296-300. (Impact factor: 1.547), ISSN No. 0928-0707
- [4] C.R. Bhattacharjee, **D.D. Purkayastha**, N. Das, ‘Surfactant-controlled low-temperature thermal decomposition route to monodispersed phase pure tricobalt tetraoxide nanoparticles’, *Mater. Lett.*, 2013, **90**, 111-114. (Impact factor: 2.269), ISSN No. 0167-577X
- [5] C.R. Bhattacharjee, **D.D. Purkayastha**, N. Das, ‘Surfactant-mediated low-temperature synthesis of phase pure multiply twinned copper nanoparticles under non-inert condition via thermal decomposition of copper malonate’, *Mater. Lett.*, 2013, **94**, 108-111. (Impact factor: 2.269), ISSN No. 0167-577X
- [6] **D.D. Purkayastha**, B. Sarma, C.R. Bhattacharjee, ‘Surfactant-assisted low-temperature synthesis of monodispersed phase pure cubic CoO solid nanoparallelepiped via thermal decomposition of cobalt(II) acetylacetonate’, *Mater. Lett.*, 2013, **107**, 71-74. (Impact factor: 2.269), ISSN No. 0167-577X

- [7] **D.D. Purkayastha**, N. Das, C.R. Bhattacharjee, 'Synthesis and antioxidant activity of cupric oxide nanoparticles accessed via low-temperature solid state thermal decomposition of bis(dimethylglyoximato)copper(II) complex', *Mater. Lett.*, 2014, **123**, 206-209. (Impact factor: 2.269), ISSN No. 0167-577X
- [8] **D.D. Purkayastha**, B. Sarma, C.R. Bhattacharjee, 'Surfactant controlled low-temperature thermal decomposition route to zinc oxide nanorods from zinc(II) acetylacetonate monohydrate', *J. Lumin.*, 2014, **154**, 36-40. (Impact factor: 2.367), ISSN No. 0022-2313
- [9] C.R. Bhattacharjee, G. Das, **D.D. Purkayastha**, P. Kanoo, P. Mondal, 'Vanadyl(IV) complexes of 4-alkoxy substituted [N,O] donor salicylaldimine Schiff bases derived from chloro-/nitroaniline: synthesis, mesomorphism, and DFT study', *J. Coord. Chem.*, 2011, **64**, 2746-2760. (Impact factor: 1.547), ISSN No. 0095-8972
- [10] C.R. Bhattacharjee, G. Das, **D.D. Purkayastha**, P. Mondal, 'Synthesis, characterisation and mesomorphic properties of a homologous series of oxovanadium(IV) complexes containing a bidentate [N,O] donor Schiff base mesogen', *Liq. Cryst.*, 2011, **38**, 711-727. (Impact factor: 1.858), ISSN No. 0267-8292
- [11] B. Sharma, **D.D. Purkayastha**, S. Hazra, L. Gogoi, C.R. Bhattacharjee, N.N. Ghosh, J. Rout, 'Biosynthesis of gold nanoparticles using a freshwater green alga, *Prasiola crista*', *Mater. Lett.*, 2014, **116**, 94-97. (Impact factor: 2.269), ISSN No. 0167-577X
- [12] B. Sharma, **D.D. Purkayastha**, S. Hazra, M. Thajamanbi, C.R. Bhattacharjee, N.N. Ghosh, J. Rout, 'Biosynthesis of fluorescent gold nanoparticles using an edible freshwater red alga, *Lemanea fluviatilis* (L.) C.Ag. and antioxidant activity of biomatrix loaded nanoparticles', *Bioproc. Biosyst. Eng.*, 2014, **37**, 2559-2565. (Impact factor: 1.823), ISSN No. 1615-7591

- [13] B. Paul, B. Bhuyan, **D.D. Purkayastha**, M. Dey, S.S. Dhar 'Green synthesis of gold nanoparticles using *Pogestemon benghalensis* (B) O. Ktz. leaf extract and studies of their photocatalytic activity in degradation of methylene blue' **Mater. Lett.**, 2015, **148**, 37-40. (Impact factor: 2.489), ISSN No. 0167-577X
- [14] A. Nath, **D.D. Purkayastha**, M. Sharon, C.R. Bhattacharjee, 'Catalyst free low temperature synthesis and antioxidant activity of multiwalled carbon nanotubes accessed from ghee, clarified butter of cow's milk' **Mater. Lett.**, 2015, **152**, 36-39. (Impact factor: 2.489), ISSN No. 0167-577X
- [15] B. Paul, B. Bhuyan, **D.D. Purkayastha**, S.S. Dhar, 'Facile synthesis of α -Fe₂O₃ nanoparticles and their catalytic activity in oxidation of benzyl alcohols with periodic acid' **Catal. Commun.**, 2015, **69**, 48-54. (Impact factor: 3.699), ISSN No. 1566-7367
- [16] B. Paul, B. Bhuyan, **D.D. Purkayastha**, S.S. Dhar, S. Behera, 'Facile synthesis of spinel CuCr₂O₄ nanoparticles and studies of their photocatalytic activity in degradation of some selected organic dyes' **J. Alloy. Compd.**, 2015, **648**, 629-635. (Impact factor: 2.999), ISSN No. 0925-8388
- [17] B. Paul, B. Bhuyan, **D.D. Purkayastha**, S.S. Dhar, B.K. Patel, 'Hexamethonium bis(tribromide) (HMBTB) a recyclable and high bromine containing reagent' **Tetrahedron Lett.**, 2015, **56**, 5646-5650. (Impact factor: 2.347), ISSN No. 0040-4039
- [18] B. Paul, B. Bhuyan, **D.D. Purkayastha**, S.S. Dhar, 'Green synthesis of silver nanoparticles using dried biomass of *Diplazium esculentum* (retz.) sw. and studies of their photocatalytic and anticoagulative activities' **J. Mol. Liq.**, 2015, **212**, 813-817. (Impact factor: 2.515), ISSN No. 0167-7322
- [19] B. Paul, B. Bhuyan, **D.D. Purkayastha**, S.S. Dhar, 'Photocatalytic and antibacterial activities of gold and silver nanoparticles synthesized using biomass of *Parkia roxburghii*

leaf" *J. Photochem. Photobio. B.*, 2016, **154**, 1-7. (Impact factor: 2.960), ISSN No. 1011-1344

[20] S. Chakraborty, **D.D. Purkayastha**, G. Das, C.R. Bhattacharjee, P. Mondal, S.K. Prasad, D.S.S. Rao, 'Photoluminescent tetrahedral d¹⁰-metal Schiff base complexes exhibiting highly ordered mesomorphism' *Polyhedron.*, 2016, **105**, 150-158 (Impact factor: 2.011), ISSN No. 0277-5387

[21] B. Bhuyan, B. Paul, **D.D. Purkayastha**, S.S. Dhar, S. Behera, 'Facile synthesis and characterization of zinc oxide nanoparticles and studies of their catalytic activity towards ultrasound-assisted degradation of metronidazole' *Mater. Lett.*, 2016, **168**, 158-162. (Impact factor: 2.437), ISSN No. 0167-577X

[22] R. Debnath, **D.D. Purkayastha**, S. Hazra, N.N. Ghosh, C.R. Bhattacharjee, J. Rout, 'Biogenic synthesis of antioxidant, shape selective gold nanomaterials mediated by high altitude lichens' *Mater. Lett.*, 2016, **169**, 58-61. (Impact factor: 2.437), ISSN No. 0167-577X

[23] B. Paul, **D.D. Purkayastha**, S.S. Dhar, 'Size-controlled synthesis of NiFe₂O₄ nanospheres via a PEG assisted hydrothermal route and their catalytic properties in oxidation of alcohols by periodic acid' *Appl. Surf. Sci.*, 2016, **370**, 469-475. (Impact factor: 2.711), ISSN No. 0169-4332

[24] B. Paul, **D.D. Purkayastha**, S.S. Dhar, S. Das, S. Halder, 'Facile one-pot strategy to prepare Ag/Fe₂O₃ decorated reduced graphene oxide nanocomposite and its catalytic application in chemoselective reduction of nitroarenes' *J. Alloy. Compd.*, 2016, **681**, 316-323. (Impact factor: 2.999), ISSN No. 0925-8388

[25] B. Paul, **D.D. Purkayastha**, S.S. Dhar, 'One-pot hydrothermal synthesis and characterization of CoFe₂O₄ nanoparticles and its application as magnetically recoverable catalyst in oxidation of alcohols by periodic acid' *Mater. Chem. Phys.*, 2016, **181**, 99-105. (Impact factor: 2.101), ISSN No. 0254-0584

[26] B. Paul, B. Bhuyan, **D.D. Purkayastha**, S. Vadivel, S.S. Dhar, ‘One-pot green synthesis of gold nanoparticles and studies of their anticoagulative and photocatalytic activities’ *Mater. Lett.*, 2016, **185**, 143-147. (Impact factor: 2.437), ISSN No. 0167-577X

[27] B. Paul, S. Sharma, **D.D. Purkayastha**, S.S. Dhar, R. Bal ‘Facile synthesis of size-controlled Ag supported on WO₃ nanorods and their application as novel and active catalyst in oxidant-free dehydrogenation of benzyl alcohols’ *Catal. Commun.*, 2019, **132**, 105804. (Impact factor: 3.674), ISSN No. 1566-7367

List of Seminar/Conference Papers

[1] C.R. Bhattacharjee, M. Sengupta, **D.D. Purkayastha**, A. Nath, S. Bhattacharjee, ‘Chemical synthesis and antimicrobial activity of NiO and ZnO nanomaterials’, **International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2009)**, organized by Center for Nanotechnology, Indian Institute of Technology Guwahati, **December 9-11, 2009.**

[2] C.R. Bhattacharjee, **D.D. Purkayastha**, N. Das, ‘Synthesis and characterization of copper nanoparticles via thermal decomposition of copper malonate’, **2nd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2011)**, organized by Department of Physics and Center for Nanotechnology Nanotechnology, Indian Institute of Technology Guwahati, **December 8-10, 2011.**

[3] C.R. Bhattacharjee, **D.D. Purkayastha**, M. Ali, ‘Thermal decomposition route to cobalt oxide nanoparticles from [bis(glycinato)cobalt(II)]-oleylamine complex’, **National Seminar on Current Trends in Condensed Matter Physics**, organized by Department of Physics, Assam University, Silchar, **February 3-5, 2011.**

[4] C.R. Bhattacharjee, **D.D. Purkayastha**, M. Ali, ‘Synthesis and characterization of cobalt oxide nanoparticles by thermal decomposition of [bis(phenylalaninato)cobalt(II)]-

oleylamine complex', **National Workshop on Emerging Trends in Nano Chemistry 2011**, organized by Department of Chemistry, St. Anthony College, Shillong, **September 20-21, 2011**.

[5] C.R. Bhattacharjee, **D.D. Purkayastha**, N. Das, 'Surfactant mediated low temperature thermal decomposition route to zinc oxide nanocrystals', **International Conference on Supramolecules and Nanomaterials-Research and Applications**, jointly organized by Department of Chemistry Gujarat University and Department of Science and Technology, Government of Gujarat, India, **February 6-8, 2012**.

[6] **D.D. Purkayastha**, B. Sarma, C.R. Bhattacharjee, 'Surfactant-assisted low-temperature thermal decomposition of zinc(II) acetylacetonate monohydrate as an access to zinc oxide nanorods', **UGC Sponsored National Seminar on Emerging Areas of Research and Development in Chemical and Physical Sciences in North East India**, organized by Department of Chemistry and Physics, Srikishan Sarda College, Hailakandi, Assam, India, **October 16-18, 2012**.

[7] **D.D. Purkayastha**, N. Das, C.R. Bhattacharjee, 'Synthesis, characterization and antioxidant activity of cupric oxide nanoparticles accessed via thermal decomposition of bis(dimethylglyoximate)copper(II) complex', **International Conference on Material Science (ICMS 2013)**, organized by Department of Physics, Tripura University, Suryamaninagar, Tripura, India, **February 21-23, 2013**.

[8] **D.D. Purkayastha**, B. Sarma, C.R. Bhattacharjee, 'Surfactant-assisted low-temperature thermal decomposition of nickel(II) acetylacetonate as an access to monodispersed Ni/NiO nanoparticles', **UGC Sponsored National Seminar on Advances in Research in Physical Sciences**, organized by Cachar College, Silchar, Assam, **March 25-26, 2013**.

[9] **D.D. Purkayastha**, S. Kairi, S. Hazra, N.N. Ghosh, C.R. Bhattacharjee, 'Surfactant-assisted low-temperature thermal decomposition of copper(II) acetylacetonate as an access to

copper nanoparticles’, **Indo-UK International Workshop on Advanced Materials and their Applications in Nanotechnology (AMAN 2014)**, organized by Birla Institute of Technology and Science Pilani, KK Birla Goa Campus, India jointly with University of Leeds, UK, **May 17-19, 2014**.

[10] **D.D. Purkayastha**, S. Kairi, C.R. Bhattacharjee, ‘Surfactant-assisted low-temperature thermal decomposition of zinc(II) salicylate as an access to zinc oxide nanoparticles’ **Regional Level Seminar on Modern Research in Chemical Sciences**, organized by Department of Chemistry, Karimganj College, Assam, **January 17, 2015**.

[11] Attended **Lecture Series on NanoScience and Technology**, organized by Department of Physics, Assam University, Silchar, **January 16-18, 2014**.

[12] Attended **International Conference on Coordination Chemistry & Organometallic Chemistry (ICCOC 2009)**, organized by Department of Chemistry, Bharathiar University, Coimbatore, **March 19-20, 2009**.

[13] Attended **International Conference on Drug Discovery and Nanotechnology**, organized by Department of Chemistry, Yeshwant Mahavidyalaya, Nanded (Maharashtra), **January 27-29, 2008**.

[14] Attended **12th National Liquid Crystal Conference**, organized by Department of Chemistry, Assam University, Silchar and Indian Liquid Crystal Society, **December 19-21, 2005**.