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Objective

I am a dedicated researcher specializing in surface chemistry, heterogeneous (nano)-catalysis for organic synthesis, wastewater treatment, and environmental and energy applications. Renowned for my professionalism, collaborative spirit, and adaptability, I strive to create sustainable solutions to complex multidisciplinary and interdisciplinary challenges, with a particular emphasis on heterogeneous catalysis.

Work Experience

Postdoctoral Fellow **(Oct 2023 – till now)**	École nationale supérieure de chimie de Rennes, University of Rennes, France **Project Title**: Fate & Transport of Chemical Reactions in Porous Media: Freeze-Thaw effects & Column Experiments
Postdoctoral Fellow **(March 2022 - Sep 2023)**	CSIR-Indian Institute of Chemical Technology, Hyderabad, India **Project Title**: Design & Development of Nanocatalysts for Organic Transformations/Synthesis
Postdoctoral Fellow **(May 2021 - Feb 2022)**	Pohang University of Science & Technology (POSTECH), South Korea **Project Title**: Difficult Reactions in Batch Methods: Implementation of Microfluidic Technology (Flow Chemistry)

Research Associate **(Aug 2020 – March 2021)**	Indian Institute of Technology, Hyderabad, India **Project Title**: Synthesis of Nanocatalysts for Environmental Applications
Visiting Researcher **(Intern Fellow)** **(June 2019-Aug 2019)**	Catalyst Surface Research Division, Institute for Catalysis (ICAT), Hokkaido University, Japan **Project Title**: Catalyst Characterization Studies

Education

Ph.D. in Chemistry – 2020	Indian Institute of Technology, Hyderabad, India **Thesis Title:** Pd Nanoparticles Catalysed C-C Couplings & Hydrogenation of Nitroarenes: Influence of Solid Support
M.Sc in Org. Chemistry – 2012	Dr. B. R. Ambedkar University, Andhra Pradesh, India
B.Sc in Chemistry – 2010	Andhra University, India

Achievements & Awards

- Awarded Postdoctoral Fellowship in Nanoscience & Technology-2022 from DST-Nano Mission, Government of India. [DST=Department of Science & Technology; Govt. of India]
- Postdoctoral Fellowship from Pohang University of Science & Technology (POSTECH), South Korea.
- Japan Student Service Organization (JASSO) Travel Award – 2019 for visiting Hokkaido University, Japan.
- Received Excellence Research Award from Indian Institute of Technology Hyderabad (IITH), India: 2016 & 2017.
- Received Senior Research Fellowship (SRF) of CSIR-UGC 2016.
- Qualified Graduate Aptitude Test for Engineering (GATE) [All India Test]- 2013 & 2014.
- Qualified National Level Competitive Examinations (CSIR-UGC-JRF)- Dec 2013.
- Qualified National Level Competitive Examinations (CSIR-UGC-NET)- Jun 2013.

Research Interests

- Design, synthesis & characterization of nanocatalysts
- Synthesis of solid catalysts such as Metal oxides, MOFs, COFs, carbon nanostructures, polymers and other porous materials etc.
- Surface chemistry
- Organic transformations/synthesis
- Fluorescence applications
- Wastewater treatment and other environmental and energy applications
- Thermal, photo and plasma catalytic reactions
- Gas, liquid and solid phase reactions in batch and flow setups
- Heterogeneous & Homogeneous catalysis
- Chemical reactions in icy environments (freeze-thaw effects)
- Fate & transport of chemical reactions in porous media: Column experiments

Publications

1. **Bhairi Lakshminarayana***, M. Selvaraj, G. Satyanarayana* and Ch. Subrahmanyam*, Switching of Support materials for the hydrogenation of nitroarenes: an overview. *Catalysis Reviews: Science & Engineering*, **2024,** *66*, 259-342 (Accepted; Corresponding Author Paper)
2. **Bhairi Lakshminarayana**, Arun Kumar Manna, G. Satyanarayana, Ch. Subrahmanyam, Pd on silica nano-spheres for direct reductive coupling of nitroarenes to aromatic azo-compounds. *Catalysis Lett.,* **2020,** *150*, 2309.
3. **Bhairi Lakshminarayana**, T. Vinod Kumar, G. Satyanarayana, Ch. Subrahmanyam, A novel ultra-small Pd NPs on SOS nanospheres: a catalyst for water-mediated domino Heck cyclization followed by alkynylation. *RSC Adv.,* **2020**, *10*, 4569.
4. **Bhairi Lakshminarayana**, K. V. Ashok, G. Satyanarayana, Ch. Subrahmanyam, PVP-PS supported ultra-small Pd nanoparticles for room temperature reduction of 4-nitrophenol. *J. Environ. Chem. Eng.,* **2020,** *8*, 103899.
5. **Bhairi Lakshminarayana**, G. Satyanarayana, Ch. Subrahmanyam, Bimetallic Pd-Au/TiO_2 nanoparticles: a highly efficient, sustainable heterogeneous catalyst for rapid catalytic hydrogen transfer reduction of nitroarenes. *ACS Omega,* **2018**, *3*, 13065.
6. **Bhairi Lakshminarayana**, L. Mahendar, P. Ghosal, B. Sreedhar, G. Satyanarayana, Ch. Subrahmanyam, Fabrication of Pd/$CuFe_2O_4$ hybrid nanowires: Heterogeneous catalyst for Heck couplings. *New J. Chem.,* **2018**, *42*, 1646.
7. **Bhairi Lakshminarayana**, Jhonti Chakraborty, G. Satyanarayana, Ch. Subrahmanyam, Recyclable Pd/$CuFe_2O_4$ nanowires: Highly active catalyst for C-C couplings and synthesis of benzofuran derivatives. *RSC Adv.,* **2018**, *8*, 21030.

8. **Bhairi Lakhsminarayana,** Lodi Mahendar, Jhonti Chakraborty, G. Satyanarayana Ch. Subrahmanyam, Organic transformations catalyzed by palladium nanoparticles on carbon nanomaterials. *J. Chem. Sci.,* **2018**, *130*, 47.
9. **Bhairi Lakshminarayana**, Surajit Sarker, Ch. Subrahmanyam, Improved performance of Mn substituted ceria nano-spheres for water gas shift reaction: Influence of preparation conditions. *Mater. Res. Bull.,* **2018**, *103*, 309.
10. **Bhairi Lakshminarayana**, Mahendar Lodi, P. Ghosal, G. Satyanarayana, Ch. Subrahmanyama, Nano-sized recyclable PdO supported carbon nanostructures for Heck olefination reaction: Influence of carbon materials. *ChemistrySelect* **2017**, *2*, 2703.
11. **Bhairi Lakshminarayana**, Bhaskar Devu Mukri, P. Ghosal, Ch. Subrahmanyama, Mn ion substitute CeO_2 nano-spheres for low temperature CO oxidation: The promoting effect of Mn ion. *ChemistrySelect* **2016**, *1*, 3150.
12. Trisha Bhattacharya, Suchand Basuli, C. B. Srinivasulu, **Bhairi Lakshminarayana**, Ch. Subrahmanyam, G. Satyanarayana, Heterogeneous direct acylation strategy for diaryl ketones and their applications to 1,3-di-hydroisobenzofurans. *ChemistrySelect* **2020**, *5*, 1349.
13. K. V. Ashok, **Bhairi Lakshminarayana,** T. Vinodkumar and Ch. Subrahmanyam, Visible light-induced mineralization of bisphenol-A: Impact of Cu ion in the ZnO crystal lattice. *J. Environ. Chem. Eng.,* **2019**, *7*, 103057.
14. Srinivas Rao Amanchi, K. V. Ashok, **Bhairi Lakshminarayana**, G. Satyanarayana, Ch. Subrahmanyam, Photocatalytic hydrogenation of nitroarenes: supporting effect of CoOx on TiO_2 nanoparticles**.** *New J. Chem.,* **2019**, *43*, 748.
15. L. Chandana, **Bhairi Lakshminarayana**, Ch. Subrahmanyam, Influence of hydrogen peroxide on the simultaneous removal of Cr(VI)and methylene blue from aqueous medium under atmospheric pressure plasma jet. *J. Environ. Chem. Eng.,* **2015**, *3*, 2760.
16. K. V. Ashok Kumar, **Bhairi Lakshminarayana**, D. Suryakala, Ch. Subrahmanyam, Reduced Graphene Oxide Supported ZnO QDs Catalyst for the Visible Light-Induced Simultaneous Removal of Tetracycline and Hexavalent Chromium. *RSC Adv.,* **2020**, *10*, 20494.
17. **Bhairi Lakshminarayana**, Pradip S. Waghmare, A G K Reddy, G. Satyanarayana and Ch. Subrahmanyam, Design and Synthesis of Silica Supported Pd Nanoparticles: Application to Cascade Reactions. *Catalysis Letters*, **2024**, 154, 1404.