Curriculum Vitae

Sasikumar Palani

Associate Professor

Department of Chemistry
Presidency University
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Date of Birth: 05.06.1979

Permanent Address: 8/35, Muthukara Street,
Titupattur – 635601, Tirupattur district, Tamil Nadu, India.

Academic Records:

Ph.D. (July 2003 – November 2008): Indian Institute of Technology - Kanpur, Kanpur, India.

Thesis title: Synthesis and structures of metal phosphonates and phosphates

***Supervisor*:** Prof. V. Chandrasekhar, Department of Chemistry, IIT-Kanpur

M.Phil. (July 2001 – November 2002): Pondicherry University, Pondicherry, India.

Dissertation title: Synthesis and Characterization of bi-coppercomplex of [11, 12] bi [4, 5, 9, 14]-tetraaza-Benzo[b]triphenylenyl.

***Supervisor*:** Prof. R. Venkatesan, Pondicherry University, Pondicherry, India.

M.Sc. (July 1999 – April 2001): Ramakrishna Mission Vivekananda College affiliated to University of Madras, Chennai, India.

B.Sc. (July 1996 – April 1999): Government Thirumagal Mills College affiliated to University of Madras, Gudiayattam, India.

Fellowships and Awards:

- Junior Research Fellowship from Council of Scientific and Industrial Research (CSIR), New Delhi, India (2003-2004)
- Senior Research Fellowship, from Council of Scientific and Industrial Research (CSIR), New Delhi, India (2005-2007)
- Senior Research Fellowship, IIT-Kanpur, Kanpur, India, (2008)
- Alexander von Humboldt Fellowship, Germany, (2010)

Professional experience:

Associate Professor. (November 2024 – till date): Department of Chemistry, Presidency University, Kolkata, India.

Assistant Professor. (November 2012 – November 2024): Department of Chemistry, Presidency University, Kolkata, India.

Post-Doctoral associate. (February 2010 – July 2012): Johann Wolfgang Goethe Universität, Frankfurt am Main, Germany.

Post-Doctoral associate. (April 2009 – January 2010): The University of Alabama, Tuscaloosa, U. S. A.

Senior Research Associate. (December 2008 – March 2009): Indian Institute of Technology - Kanpur, Kanpur, India.

Research Assistant. (Jan 2003 – June 2003): Indian Institute of Technology - Kanpur, Kanpur, India.

Broad Area of Research

- Environmental Chemistry (Water Remediation), Catalysis and Inorganic chemistry

Ongoing Research Work

- **Water Remediation**

Our research group focuses on water remediation from pollutants using adsorption techniques. We use surface-tweaked mixed metal oxides to remove contaminants from water. Our work involves making and studying these metal oxides, investigating how pollutants are reduced through kinetic and isotherm studies, regenerating the material, and testing our methods for real-world use.

- **Catalysis (Chan-Evans-Lam Coupling):**

Organic compounds with carbon-nitrogen (C-N) bonds are common in pharmaceuticals and organic materials. Many methods exist to make these compounds, but those often use harsh conditions or expensive catalysts. We use copper-based treated mixed metal oxides as green catalysts for C-N coupling reactions.

Past Research Experiences:

- **Phosphonate and Phosphate**

In my doctoral research, I created new phosphonic acids and phosphate ligands. I examined how these ligands interact with different metal ions and organotin precursors. We characterized the resulting metal aggregates structurally and through spectroscopy. These aggregates work well as single molecular precursors for materials. We used cerium phosphonates as catalysts to produce valuable functionalized dihydro pyrimidines using a three-component Biginelli reaction. All the dinuclear metal aggregates functioned as artificial nucleases.

- **Organoborane**

In my post-doctoral research, I made several donor-acceptor and donor-pi-acceptor molecules using diarylamine (a Lewis base) as the donor and diaryl borane (a Lewis acid) as the acceptor. I characterized these molecules structurally and spectroscopically. They showed interesting optoelectronic properties in both solution and solid state.

Teaching Experiences (Since Nov 2012):

- Post Graduate: Cages and Clusters, Organometallic Chemistry, Hetero nuclear NMR application to inorganic chemistry
- Under Graduate: Chemical periodicity, Acid-Base Chemistry, Organometallic Chemistry, f-block elements

Skills and Experiences

- Synthesis, purification and characterization of main group, transition metal, organometallic and inorganic compounds.
- Handling air and moisture sensitive compounds using the standard Schlenk and Glove-box techniques
- Handling the synthesis of organic and organometallic compounds from milligram to multi-gram scale.
- Mass, NMR and High resolution multi-nuclear NMR (^{13}C, ^{11}B, ^{19}F, ^{31}P, ^{29}Si, ^{119}Sn, COSY, HMQC and HMBC) spectral analysis.
- UV, IR, Fluorescence, Cyclic Voltammetric, SEM, EDX, TEM, TGA and DSC Techniques
- Single crystal X-ray structural solution and analysis using SHELXTL, WINGX, SIR92, SIR97, DIAMOND, ORTEP and PLATON

Selected Publications:

[1] P. Sasikumar, A. Majhi, Advancements in Chan-Lam cross-coupling reactions utilizing copper and nickel salts, Cu/Ni-incorporated polymers, and nanocomposites, Inorganic Chemistry Communications 173 (2025) 113799. (**Impact Factor 4.4)**.

[2] A. Ghosh, S. Mondal, S. Kanrar, A. Srivastava, M.D. Pandey, U.C. Ghosh, P. Sasikumar, Efficient removal of chromate from wastewater using a one-pot synthesis of chitosan cross-linked ceria incorporated hydrous copper oxide bio-polymeric composite, International Journal of Biological Macromolecules 276 (2024) 134016. (**Impact Factor 7.7)**.

[3] S. Kanrar, A. Ghosh, A. Ghosh, S. Chowdhury, M. Sadhukhan, U. Chand Ghosh, P. Sasikumar, Tailored hybrid Ce-Zr-La hydrous oxide material: Preparation, characterization and application towards removal of fluoride and copper(II) from their contaminated water, Inorganic Chemistry Communications 158 (2023) 111381. (**Impact Factor 4.4)**.

[4] S. Kanrar, A. Ghosh, A. Ghosh, A. Mondal, M. Sadhukhan, U.C. Ghosh, P. Sasikumar, One-pot synthesis of Cr(III)-incorporated Zr(IV) oxide for fluoride remediation: a lab to field performance evaluation study, Environ Sci Pollut Res 27 (2020) 15029–15044. (**Impact Factor 5.8)**

[5] K. Mukhopadhyay, A. Naskar, U.C. Ghosh, P. Sasikumar, One-pot synthesis of β-cyclodextrin amended mesoporous cerium(IV) incorporated ferric oxide surface towards the evaluation of fluoride removal efficiency from contaminated water for point of use, Journal of Hazardous Materials 384 (2020) 121235. (**Impact Factor 12.2).**

[6] U. Ghosh, A.G. Ghosh, S. Palani, K. Biswas, Adsorption behaviour of bromophenol blue from the aqueous solution on Labeo bata fish scale, a bio-waste material, Indian Journal of Chemical Technology (IJCT) 26 (2019) 321–329. (**Impact Factor 0.5)**

[7] K. Mukhopadhyay, U.C. Ghosh, P. Sasikumar, Enhanced capacity of fluoride scavenging from contaminated water by nano-architectural reorientation of cerium-incorporated hydrous iron oxide with graphene oxide, Environ Sci Pollut Res 26 (2019) 26112–26133. (**Impact Factor 5.8)**.

[8] S. Kanrar, S. Debnath, P. De, K. Parashar, K. Pillay, P. Sasikumar, U.C. Ghosh, Preparation, characterization and evaluation of fluoride adsorption efficiency from water of iron-aluminium oxide-graphene oxide composite material, Chemical Engineering Journal 306 (2016) 269–279. (**Impact Factor 13.4)**.

[9] V. Chandrasekhar, P. Sasikumar, First example of a molecular Ce(III) phosphonate: synthesis, structural characterization and catalytic activity of $[Ce_2\{Ph_3CPO_2(OEt)\}_4(NO_3)_2(H_2O)_4]$, structural diversity of $Ph_3CPO_3H_2$, Dalton Trans. (2008) 6475–6480. (**Impact Factor 3.5)**.

[10] V. Chandrasekhar, P. Sasikumar, R. Boomishankar, G. Anantharaman, Assembly of Lipophilic Tetranuclear (Cu_4 and Zn_4) Molecular Metallophosphonates from 2,4,6-Triisopropylphenylphosponic Acid and Pyrazole Ligands, Inorg. Chem. 45 (2006) 3344–3351. (**Impact Factor 4.3)**.