

Dr. Shanish Kumar,

Assistant Professor, Dept. of Chemistry
M. D. College, Naubatpur, Patna-801109
E-mail: shanish83@gmail.com,
Mobile: +91-973-4428-588, +91-908-2101-286

Education Profile

- Ph.D., Chemistry 2008–2014
Department of Chemistry, Indian Institute of Technology Kharagpur, Kharagpur-721302, India
Advisor: Prof. Ganesan Mani

Dissertation Topic: **Group 10 and 11 Metal Complexes Bearing New Pyrrole-based Diphosphine Ligands and Chromium(III) Complexes Containing 3,5-Dimethylpyrazolate Ligand.**

- Master of Science, Inorganic Chemistry 2005–2007
Department of Chemistry, University of Delhi, India,
- Bachelor of Science, Chemistry(H) 2002–2005
Department of Chemistry, Kirori Mal College, University of Delhi, Delhi 110007, India,
- Higher Secondary Education 1999–2001
Jharkhand Intermediate Education Council, Ranchi
- Secondary Education 1999
Bihar School Examination Board, Patna

Fellowships/Honors

- Qualified for joint CSIR-UGC National Eligibility Test (NET) and was awarded **Junior Research Fellowship (JRF)** by Council for Scientific and Industrial Research (CSIR), New Delhi, India (June, 2007).
- Qualified Joint CSIR-UGC for **Senior Research Fellowship (SRF)**, India (January 2010).

Teaching Experience

- Four years (July, 2008 – July, 2012) teaching experience in inorganic chemistry (tutorial and lab classes) for B. Tech 1st year students at Indian Institute of Technology Kharagpur.

- Mentored the four first year graduate student who rotated in the Lab in 2011-2013.
- Guest faculty, Centre for Nanoscience and Nanotechnology, Aryabhata Knowledge University, Patna, Jan'15 to June'15.
- Assistant Professor, Suraj Degree College, MDU, Mahendargarh, Haryana, July'15 to Jan'16
- Teaching Assistantships, Feb'16-Oct'17 (tutorial and Lab) for UG and PG courses at Indian Institute of Technology Bombay during by my Post-doc tenure.
- Assistant Professor, M D College, Naubatpur, Patna, Nov'17 to till date.

Research Experience

- Post Doctoral Fellow(PDF), Indian Institute of Technology Bombay Feb'16- Oct'17
- Research Assistant, Indian Institute of Technology Kharagpur Sep'13-Aug'14
- Indian Institute of Technology Kharagpur 2008–2014

Project: Development of new Pyrrole-based phosphine ligands and their transition metal complexes to study the different organic transformation reaction and synthesis of Cr(III) complexes to study the olefin polymerization reaction.

- Designed and developed a very simple synthetic method for the synthesis of new pyrrole based PNP pincer and PNNP type diphosphine ligands.
- Synthesized a series of Pd(I), Pd(II), Ni(I), Ni(II), Cu(I), and Ag(I) transition metal complexes bearing new PNP pincer and PNNP-type diphosphine ligands.
- Studied the catalytic activity for C–C coupling, carrying out the Suzuki reaction in the aqueous medium using Pd(II), pincer complex.
- Synthesized a series of Cr(III) complexes by the reaction between $[\text{Cp}^*\text{CrCl}_2]_2$ and 3,5-dimethyl pyrazole.
- Synthesized novel Yb(III) complexes and structurally characterized.

Research Skills

- More than seven years research experience in the field of phosphine ligands, transition and lanthanide metal chemistry at IIT Kharagpur and IIT Bombay.
- Highly skilled in handling air and moisture sensitive compounds and their purification by standard schlenk line technique or inside the Glove Box.
- Skillful in the execution of general purification, crystallization and separation techniques.
- Proficient in experimental methodology and interpretation of data from techniques such as multinuclear NMR, FT-IR, UV-vis etc.
- Experienced in the handling of advanced experimental instruments like NMR spectrometer (*Bruker-200* and *Bruker-400*), FT-IR (*Perkin-Elmer Spectrometer*), UV-vis

spectrometer, CHN Analyzer (*Perkin-Elmer 2400-II*), Single crystal X-ray diffractometer etc.

- Capable in solving crystal structures (Single crystal X-ray) of organic and inorganic compounds.

Publications and Patent

- **Shanish Kumar**, Ganesan Mani, Debodyuti Dutta, Sabyashachi Mishra “Structural Diversity of Copper(I) Complexes Formed by Pyrrole- and Dipyrrolylmethane-based Diphosphine Ligands with Cu–X···HN Hydrogen Bonds.” *Inorg. Chem.***2014**, *53*, 700–709.
- **Shanish Kumar**, Ganesan Mani. “Synthesis and Structural Characterization of Chromium(III) Complexes Bearing 3,5-dimethylpyrazolate Ligand”. *Polyhedron*, **2015**, *99*, 47-52.
- **Shanish Kumar**, Ganesan Mani, SukantoMondol, PratimkumarChattaraj. “Pyrrole-based New Diphosphines: Pd and Ni Complexes Bearing the PNP Pincer Ligand”. *Inorg. Chem.***2012**,*51*, 12527–12539.
- DebasishGhorai, **Shanish Kumar**, Ganesan Mani. “Mononuclear, helical binuclear palladium and lithium complexes bearing a new pyrrole-based NNN-pincer ligand: fluxional property”. *Dalton Trans.* **2012**, *41*, 9503–9512.
- Ganesan Mani, Tapas Guchhait, Rajnish Kumar, **Shanish Kumar**. “Macrocyclic and Acyclic molecules synthesized from dipyrrolylmethanes: Receptors for Anions”. *Org. Lett.* **2010**, *12*, 3910–3913.
- **Shanish Kumar**, Oishi Jana, Vasudevan Subramaniam. The ‘Reverse Transmetalation’ Reaction of the Pyrrole-Based PNP Pincer Ni(II) Complexes: X-ray Structures of Binuclear Silver(I) and Thiocyanate Nickel(II) complexes. *Inorganica Chimica Acta*, **2018**.
- **Patent: Shanish Kumar** and Ganesan Mani. “Pyrrole-based Diphosphines and their Oxidized Products” filed Ref. No.508/KOL/2013, dated- 3/5/2013.

Scientific Meeting/ Presentation/ Workshop

- **Sixth One Day National Symposium in Chemistry** held in the department of Chemistry, Indian Institute of Technology Kharagpur, India (8th November, 2008).
- Graduate student registration seminar given Oral presentation “*Synthesis and Structural Characterization of Yb(III) and Cr(III) Complexes*”(28th January 2010).
- Participated in **First Three Day International Symposium (DJSRTC) in Chemistry** held in the department of Chemistry, Indian Institute of Technology Kharagpur, India (21st - 23rd October, 2011).

- **Symposium on Modern Trends in Inorganic Chemistry (MTIC–XIV)** held in the school of Chemistry, University of Hyderabad, Hyderabad, India. Represented poster entitled “**Synthesis and Structural Characterization of 3,5-Dimethylpyrazolate Cr(III) Complexes**”.(10th - 13th December, 2011).
- **Fourth One Day “Research Scholar Day” Symposium** held in the department of Chemistry, Indian Institute of Technology Kharagpur, India (1st March, 2013). Represented poster on the topic entitled “**Pd and Ni Complexes Bearing New PNP Pincer Ligand**”.
- Symposium organized by American Chemical Society as ‘**ACS on Campus**’ at the Department of chemistry, IIT Kharagpur, India. Represented poster entitled ‘**Pyrrrole Based PNP Pincer and PNP Type Diphosphines: Transition Metal Complexes and Catalysis**’. (25th November, 2013).
- Participated in Three day International workshop organized by Department of Chemistry, Indian Institute of Technology Bombay, in '**Workshop on Electronic Structure of Coordination Complexes**' (WESCC). (16th-18th May 2016)
- Participated in Three day International Conference organized by Department of Chemistry, Indian Institute of Technology Bombay, in '**Modern Trends in Molecular Magnets**' (MTMM). (19th-21th May 2016).
- Participated in International Seminar on Green Chemistry: Synthesis, Processing and Devices (ISGCSPD-2018) and given Oral Presentation (**Solvent Free Synthesis of PNP-Pincer Ligand: Pd(II) Complex and Suzuki Coupling in Water**) held in the department of Chemistry, Veer Kunwar Singh University, Ara, India (6th -7th April, 2018).

Brief Research Work of My Thesis

