

Dr. U. P. Singh

Professor

E-mail: udaipfcy@iitr.ac.in

Phone: +1332-285329



Academic Profile

- 🕒 Ph.D. – Banaras Hindu University, 1988
- 🕒 M.Sc. – Banaras Hindu University, 1984
- 🕒 B.Sc. – Banaras Hindu University, 1982

Post Doctoral Experience

Alexander von Humboldt Fellow 2007 (Max-Planck-Institute for Bioinorganic Chemistry, Muelheim), 2006 (University of Stuttgart), 2005 (University of Freiburg), 2001 (Max-Planck-Institute for Strahlenchemie, Muelheim), 1991-1992 (University of Resenburg)

JSPS Visiting Scientists, 2003 (The Institute for Physical and Chemical Research, RIKEN, Saitama), 1999 (Tokyo Institute of Technology).

Science and Technology Agency Fellow, Japan, 1995-1996 (The Institute for Physical and Chemical Research, RIKEN, Saitama).

UNESCO Research Fellow at Tokyo Institute of Technology, Japan, 1989-1990

Research Interests

- 🕒 Coordination Chemistry, Bio-Inorganic Chemistry, Host-guest/
Supra- molecular Chemistry.

Selected Research Publications (up to 10 from last 5 years)

1. Study of picrate salts with amines, N. Goel, **Udai P. Singh**, G. Singh, P. Srivastava
Journal of Molecular Structure, 2013, 427, 1036.
2. Syntheses, Structural, Computational and Thermal Analysis of Acid-Base
Complexes of Picric Acid with N-Heterocyclic Bases, N. Goel, **Udai P. Singh**,
Journal of Physical chemistry A, 2013, 117, 10428.
3. Reactivity of nitric oxide with ruthenium complexes derived from bidentate ligands

:structure of a ruthenium nitrosyl complex, photoinduced generation and estimation of nitric oxide, K. Ghosh, R. Kumar, K. Kumar, A. Ratnam, **Udai P. Singh**, RSC Advances, 2014, 4, 43599

4. Variation of CO₂ adsorption in isostructural Cd(II)/Co(II) based MOFs by anion modulation, **Udai P. Singh**, S. Narang, P. Pachfule, R. Banerjee, *CrystEngComm*, 2014, 16, 5012.
5. A Supramolecular Approach towards the Construction of Molecular Salts Using Phosphonic Acid and Pyrazole, **Udai P. Singh**, S. Narang, *CrystEngComm*, 2014, 16, 7777.
6. Anion Directed Supramolecular Architecture of Benzimidazole-Based Receptor, **Udai P. Singh**, R. R. Maurya, S. Kashyap, Journal of Molecular Structure, 2015, 1081, 128.
7. Supramolecular assemblies of benzene-1,3,5-tricarboxylic acid and 3,5-substituted pyrazoles: Formation and structural Analysis, **Udai P. Singh**, K. Tomar, S. Kashyap, *CrystEngComm*, 2015, 17, 1421.
8. Spontaneous reduction of mononuclear high-spin iron (III) complexes to mononuclear low-spin iron (II) complexes in aqueous media and nuclease activity via self-activation, K. Ghosh, N. Tyagi, A. Kumar Dhara, **Udai P. Singh** Chemistry–An Asian Journal, 2015, 10, 350.
9. Construction and structural diversity of Cd-MOFs with pyrazole based flexible ligands and positional isomer of naphthalenedisulfonate, **Udai P. Singh**, Neetu Singh, Suman Chandra, Inorg. Chem. Comm. 2015, 61, 3.
10. Solvent-mediated supramolecular templated assembly of a metal organophosphate via a crystal–amorphous–crystal transformation, S. Narang, **Udai P. Singh**, P. Venugopalan, *CrystEngComm*.2016, 18, 54.

Projects/Awards/Honors

Completed:

1. Synthesis of Optically active Polypyrazolylborate Ligands for Enantioselective Cyclopropanation reaction, DST, New Delhi (under young scientists scheme).
2. Binuclear Manganese Complexes as Model for the Manganese-containing Ribonucleotide Reductase Enzymes, CSIR, New Delhi.
3. Synthesis of Model compounds for Zinc-containing Enzymes, UGC, New Delhi.
4. Fixation of Atmospheric Carbon dioxide by Mononuclear Hydroxo Complexes of Divalent Metals, AICTE, New Delhi.
5. Metal-Nucleic acid Base Pair Interaction – Solution and Antitumor Studies, UGC, New Delhi.
6. Dioxygen Complexes of Manganese and Cobalt: Synthesis, Molecular Structure and Reactivity Studies, CSIR, New Delhi.
7. Synthesis, Characterization and Reactivity Studies of Vanadium and Manganese Nitrido Complexes, DST, New Delhi.
8. Synthesis and Characterization of Some Complexes as MRI (Magnetic Resonance Imaging) Contrast agents, MHRD, Govt. of India, New Delhi.
9. Zn(II) and Cd(II) Hydroxo Complexes with Tris(pyrazolyl)borate (N3) and Tris(thioimidazolyl)borate (S3) ligands for Ester Hydrolysis, CSIR, New Delhi.

In hands:

1. Organic and Metal-Organic framework using Anthracene based Azoles for selective adsorption of gases and catalysis, CSIR, New Delhi.
2. Development of Silica based Mesoporous Materials for Catalysis and Adsorption, BRNS, Mumbai.

Awards/Honors

1. Dr. B. C. Haldar Memorial Award, 1987.
2. Recipient of Indian Science Congress Association Young Scientist Award, 1991.
3. Life Member: Indian Science Congress Association.

4. Life Member: Chemical Research Society of India.
5. Member: Society for Biological Inorganic Chemistry, USA
6. Life Member: Indian Council of Chemists

Courses Taught

🕒 CY-101 Chemistry, CY-741, Analysis of Foods and Drugs, CY-752, Environmental Chemistry, CY-621, Inorganic Chemistry - I

Some recently solved interesting X-ray structure from our group are –







