

CURRICULUM VITAE

Name: Lalit Rajput
C/O. Prof. Kumar Biradha
Department of Chemistry
Indian Institute of Technology
Kharagpur-721302, West Bengal, India
Phone: (+91)-3222-283346
Mobile: 09732654149
E-mail: lalitdrajput@gmail.com



Present position: Senior Research Fellow (SRF), Indian Institute of Technology,
Kharagpur-721302

Permanent Address: C/O. Dilipsing S. Rajput
Flat No.-3, Purva Appt., Ganesh Nagar, Kathe Mala,
Dwarka, Dist. Nasik, Pin. 422001
Maharashtra
India
Phone: (+91)-0253-2592190

Date of Birth: January 5, 1982

Marital status: Single

Nationality: Indian

Sex: Male

Educational background:

August, 2005-June, 2010 Doctoral research in the area of “*Crystal Engineering with Molecules Containing Multiple Secondary Amide Functionalities via Halogen-Halogen Interactions, Hydrogen Bonds and Coordination Bonds*” under the supervision of Prof Kumar Biradha, in the Department of Chemistry, Indian Institute of Technology, Kharagpur-721 302, India.

August, 2004- August, 2005 Junior Research Fellow (JRF), NMRL, Defence Research & Development Organization, Mumbai-421506, India.

2001-2003 Master of Science in Chemistry (Org. Chem. Specialization)
R. Y. K. College-Nasik, University of Pune, Maharashtra, India.
[1st class (69.20%)]

- 1998-2001 Bachelor of Science in Chemistry
S. V. K. T. Art, Science & Commerce College-Deolali Camp,
Nasik, University of Pune, Maharashtra, India. [Passed with
1st class with Distinction (73.83%)]
- 1998 High Secondary (10+2) from M.H.S.E. (Nasik), Maharashtra,
India [Passed with 1st class (66.50 %)]
- 1996 Secondary (10) from M.H.S.E. (Nasik), Maharashtra, India
[Passed with 1st class (62.13 %)]

Work Experience:

- 1) April, 2004- August, 2004: **Research Associate**, Innovasynth Technologies (I) Ltd.,
Khopoli, Mumbai-410203 (Maharashtra).
- 2) June, 2003-April, 2004: **Process Technician Trainee**, Sterlite Industries (I) Ltd.,
Tuticorin- 628008 (Tamil Nadu).

Teaching Experience: General Organic classes (tutorial & laboratory) for
undergraduate students were taken during the Ph.D program at
IIT Kharagpur.

Areas of Specialization: Organic chemistry

Exams Qualified: 1) Graduate Aptitude Test in Engineering (GATE-2005)-**Chemistry**
2) Maharashtra State Level Eligibility Test for Lectureship in
Chemical Sciences, February-2005

Languages familiar with: Marathi, Hindi, English, Bengali, German (Certificate
Course).

Working Experience in Following Instruments:

1) **X-ray crystallography:** Hands on experience in X-ray crystallography in
Bruker-Nonius Mach3 CAD4 and Bruker-APEX-II CCD X-ray single crystal X-ray
diffractometers. I have solved more than 40 crystal structures in my doctoral research at
IIT, Kharagpur. All calculations of structure solution and refinement as well as all
structural plots were done on PC using WINGX-32 and SHELX-97 program.

2) **Automated Gas Sorption Analyzer (Quantachrome):** To analyze the surface
area, pore size and sorption properties of the materials.

3) **NMR Spectrometer:** NMR instruments (BRUKER-AC 200 and 400MHz spectrometer) to collect proton and carbon-13 NMR data.

4) **UV-vis spectrophotometer:** A Shimadzu UV-3100 spectrophotometer to record UV-vis spectra and kinetic data.

5) **IR spectrometer:** IR spectra ($4000\text{-}300\text{ cm}^{-1}$) with the help of Perkin Elmer 240C spectrophotometer.

6) **Powder-XRD:** Powder XRD patterns with the help of PHILIPS Holland PW-1710 diffractometer.

Symposiums attended/participated:

1) Bimetallic Clusters of Pyridine Appended EDTA-Amides in Designing 1D & 2D Coordination Frameworks

Lalit Rajput and Kumar Biradha, Modern Trends In Inorganic Chemistry (**MTIC-XII**) IIT Madras, 6-8 Dec, **2007**. **Poster presented.**

2) Effect of Remote Substitution on Molecular geometry, Self aggregation & Co-crystal formation in the pyridine appended EDTA-amides

Lalit Rajput, Indo-U.S. Workshop on Pharmaceutical Cocystals and Polymorphs, Mysore, India, 8-10 Feb, **2009**. **Oral presentation.**
(Ref.- *Crystal Growth & Design*, **2009**, *9*, 3339).

3) Coordination Polymers of Pyridine Appended Amides and Reverse Amides: Iso-structurality of 1D-Chains & 2D-Layers

Lalit Rajput, 1st Research Scholar Day, Department of Chemistry, IIT Kharagpur, 14th Sept., **2009**. **Oral presentation.**

4) Design & Synthesis of Supramolecular solids through Crystal Engineering Approach
Gautam Mahata, **Lalit Rajput**, Ramkinkar Santra, Suman Samai, Sandipan Roy, Gargi Mukherjee, Kaustav Banerjee and Kumar Biradha, 1st Research Scholar Day, Department of Chemistry, IIT Kharagpur, 14th Sept., **2009**. **Poster presented.**

5) Assembling Triple Helical Amide-to-Amide Hydrogen Bonded Columns into Porous Network *via* Halogen...Halogen Interactions

Lalit Rajput, 2nd Research Scholar Day, Department of Chemistry, IIT Kharagpur, 14th Sept., **2010**. **Oral presentation.**

List of publications:

1. Assembling Coordination Networks of Bis-amido Pyridines *via* Hydrogen Bonds: Iso-structurality and Large Hydrophobic Cavities for Guest Inclusion.

Lalit Rajput and Kumar Biradha, *New Journal of Chemistry*, **2010**, DOI: 10.1039/c0nj00070a.

2. Carboxylic Acid and Phenolic Hydroxyl Interactions in the Crystal Structures of Co-crystals/Clathrates of Trimesic acid and Pyromellitic Acid with Phenolic Derivatives.
Lalit Rajput, Navendu Jana and Kumar Biradha, *Crystal Growth & Design*, **2010**, *10*, 4565.
3. Assembling one-dimensional coordination polymers into three-dimensional architectures *via* hydrogen bonds.
Lalit Rajput, Madhushree Sarkar and Kumar Biradha, *Journal of Chemical Sciences*, **2010**, *122*, 707.
4. Assembling Triple Helical Amide-to-Amide Hydrogen Bonded Columns of tris(4-halophenyl)Benzene-1,3,5-tricarboxamides into Porous Materials *via* Halogen...Halogen interactions.
Lalit Rajput, Vladimir V. Chernyshev and Kumar Biradha, *Chemical Communication*, **2010**, *46*, 6530.
5. Crystal Engineering Studies on Ionic Crystals of Pyridine and Carboxylic Acid Derivatives Containing Amide Functional Groups.
Lalit Rajput, Ramkinkar Santra and Kumar Biradha, *Australian Journal of Chemistry*, **2010**, *63*, 578.
6. Reliable Formation of an Unusual and Chiral Two-Dimensional Network Containing Entanglement of the Ligand in the Presence of Different Anions.
Lalit Rajput and Kumar Biradha, *Crystal Growth & Design*, **2009**, *9*, 3848.
7. Robust Hydrogen Bonding Synthons in One-dimensional and Two-dimensional Coordination Polymers of Pyridine Appended Reverse Amides and Amides.
Lalit Rajput and Kumar Biradha, *Crystal Engineering Communication*, **2009**, *11*, 1220.
8. Design of Co-crystals *via* New and Robust Supramolecular Synthons between Carboxylic Acid and Secondary Amide: Honeycomb Network with Jailed Aromatics.
Lalit Rajput and Kumar Biradha, *Crystal Growth & Design*, **2009**, *9*, 40.
9. Design and Synthesis of Coordination Networks Containing Amide, Pyridine and Carboxylate Functionalities.
Lalit Rajput and Kumar Biradha, *Polyhedron*, **2008**, *27*, 1248.
10. Three Crystalline Forms of 1,3,5-benzene-tri(3-pyridinyl)carboxamide from the Same Solvent System.
Lalit Rajput and Kumar Biradha, *Journal of Molecular Structure*, **2007**, *876*, 339.
11. Comparative Structural Studies on Homologues of Amides and Reverse Amides: Unprecedented 4-fold Interpenetrated Quartz Network, New β -Sheet and Two-Dimensional Layers.
Lalit Rajput, Subhankar Singha and Kumar Biradha, *Crystal Growth & Design*, **2007**, *7*, 2788.

12. Bimetallic Clusters of Pyridine Appended EDTA-amides in Designing 1D and 2D Coordination Frameworks.

Lalit Rajput and Kumar Biradha, *Crystal Growth & Design*, **2007**, 7, 2376.

13. Effect of Substituents on Molecular Geometry and Self Aggregation in the Crystal Structures of Ethylenediamine-N,N,N',N'-tetraamides.

Lalit Rajput, Palash Sanphui and Kumar Biradha, *Crystal Growth & Design*, **2007**, 7, 1872.

14. Crystal Engineering of Coordination Polymers Using 4,4'-bipyridine as a Bond between Transition Metal Atoms.

Kumar Biradha, Madhushree Sarkar and **Lalit Rajput**, *Chemical Communication*, **2006**, 4169.

Book Chapter:

1. Crystal Engineering with Molecules Containing Amide and Pyridine Functionalities.

Kumar Biradha and **Lalit Rajput**

Organic Crystal Engineering: Frontiers in Crystal Engineering Edited by Edward R.T. Tiekink, Jagadese Vittal and Michael Zaworotko, **2010**, John Wiley & Sons, Ltd.