

SCHOOL OF SCIENCES

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EDUCATIONAL QUALIFICATIONS

Ph.D. (Solid-state and material chemistry), 2006, NCL, Pune
M.Sc. (Inorganic Chemistry), 1999, Bangalore University
B.Sc. (Chemistry, Physics, Math), 1997, Bangalore University

Work Experience (latest first)

Assistant Professor, 2018-present
Assistant Professor, 2016-17, Kerala Agricultural University & NIT, Kerala
Assistant Professor, 2015-2016, St. Joseph College, Kerala.
Marie-Curie International Fellowship : Durham University, UK, 2013-2015
Postdoctoral Research Associate: School of Chemistry, University of Leeds, UK, 2011- 2012
Post Doctoral Fellow: University of California-Los Angeles, USA, 2009-2010
Post Doctoral Fellow: Brandeis University, USA, 2007-2009
Lecturer: 2000 - 2001, Vijaya College, Bangalore, Karnataka, India

SUBJECTS TAUGHT

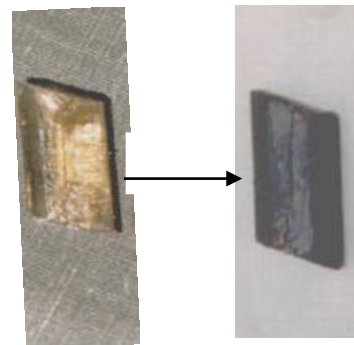
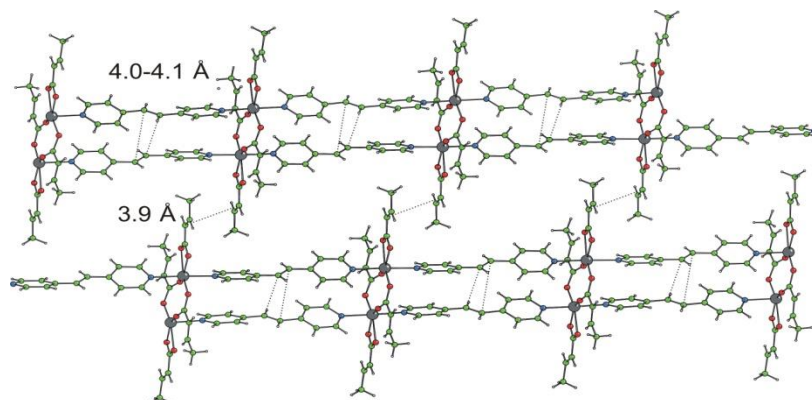
- Inorganic, Physical, Solid state and Material Chemistry

RESEARCH AREA

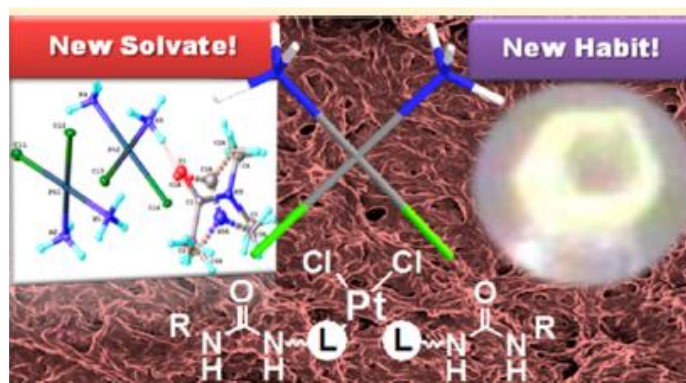
Design, synthesis and characterisation of crystalline materials able to undergo chemical reactions. Study of solid-state reactions in metal complexes by gamma and UV irradiation. Polymorphism study in organic and drug molecules to identify new crystalline phases. Preparing a gelator which mimics drug molecule and crystallization in the gel media to discover novel polymorphs of drug molecules.

Upon exposure to ^{60}Co γ -rays, metal complexes and salts containing α,β -unsaturated carboxylates exhibit extraordinary solid-state reactivity. For many years solid-state reactivity of heavier metal alkenoates and alkynoates have not been explored. Heavier metal derivatives are more potential to undergo solid-state reactivity since their absorption cross section is high for radiation than light metal derivatives. In addition to this, other systems capable of undergoing both UV-induced [2+2] photocyclization and γ -ray induced radical reactions can be developed. Formation of the product can be characterized by NMR and mass spectroscopy. One of the aims

is to study solid-state reactivity through SCSCT from which reaction pathway (mechanism) occurring in the solid-state could be established.



Polymorphism and methods used to discover new forms are key issues in pharmaceutical industry drawing huge intellectual and financial investment.³ In addition to new polymorphic forms, the external morphology also plays important role with a number of examples representing the effects of changing morphology on *in vitro* dissolution rate with potential for improving the bioavailability. Thus, there remains a demand for the preparation of novel, modern polymorph screening techniques. An alternative method is to prepare a gel which mimics drug molecule and then crystallize in the gel media. This approach can be applied to many drug molecules and polymorph screening can be carried out to discover new forms.



PROJECTS

Title: Single crystals as chemical transitions and using gel as media for crystallization of APIs

Amount: 2.78 Crore

Role: Co-Principal Investigator

Agency: European Commission

Duration: Dec 2012 – Nov 2014

CORE GROUP

Name: Siddhanath Damodar Bhosle & Vikranth Hitendrabhai Pandya

Date of joining: 23-10-2018

Topic: Transition metal catalysis for process functionalization of bioactive compound

HONOR/AWARD

- Certificate of outstanding contribution award in reviewing, Elsevier, Amsterdam, July 2017.
- Marie-Curie Researcher award by European Commission 2012
- Keerthi Sangoram Endowment Award, Best Research Scholar award, 2006
- Junior Research Fellowship, Council of Scientific and Industrial Research, Govt. of India 2001
- Bursary to attend British Crystallographic Association meeting, UK, by International Center for Diffraction Data (ICDD). 2003
- Professor Ramachandra Prize for securing College top marks in B.Sc, 1997

MEMBERSHIP

- Chemical Research Society of India
- Materials Research Society of India
- Indian Crystallographic Association
- British Crystallographic Association

KEY PUBLICATIONS

JOURNALS

- J. PrakashaReddy, and V. R. Pedireddi “Supramolecular pseudopolymorphs: double helix and planar structures with channels”. *Tetrahedron Lett.* 2003, *44*, 6679-6681.
- S. Ahn, J. PrakashaReddy, B. M. Kariuki, S. Chatterjee, A. Ranganathan, C. N. R. Rao and K. D. M. Harris, “Structural rationalisation of co-crystals formed between trithiocyanuric acid and molecules containing hydrogen bonding functionality”. *Chem. Eur. J.* 2005, *11*, 2433-2439.
- D. D. Dhavale, S. D. Markad, N. S. Karanjule and J. PrakashaReddy, “Asymmetric dihydroxylation of D-glucose derived α , β -unsaturated ester: Synthesis of azepane and nojirimycin analogues”. *J. Org. Chem.* 2004, *69*, 4760-4766.
- J. Prakasha Reddy,* A. Delori, and B. M. Foxman, “Molecular and crystal structure of a new polymorph of malonic acid with $Z' = 3$ ”. *J. Mol. Struct.* 2013, *1041*, 122-126.
- J. Prakasha Reddy,* D.Swain, and V. R. Pedireddi, “Polymorphism and Phase Transformation Behavior of Solid Forms of 4-Amino-3,5-dinitrobenzamide”. *Cryst. Growth Des.* 2014, *14*, 5064-5071.
- J. Prakasha Reddy,* Panchami Prabhakaran and J. W. Steed, “Polymorphism of (Z)-3-Bromopropenoic Acid: A High and Low Z' Pair”. *Cryst. Growth Des.* 2016, *16*, 4021-4025.

CONFERENCES

- J. PrakashaReddy, “Amide functionality in the formation of novel supramolecular architectures”. Poster presentation, BCA spring meeting, April 15-16, 2003, York, U. K.

- J. PrakashaReddy, “Synthesis and rational analysis of polymorphs of 4-chloro-3,5-dinitrobenzoic acid”. XXXIII National Seminar on Crystallography, 8-10 January 2004, National Chemical Laboratory, Pune -411008- INDIA.
- J. PrakashaReddy, “Solvent mediated polymorph transformation: From solvation to stable polymorph”. Invited lecture, RSC student symposium, West India section, 24-25th Sept 2004, Bombay, INDIA.
- J. PrakashaReddy, “Polymorphism study in 4-amino3,5-dinitrobenzamide”. ACS-CSIR joint international conference, 7th-9th January 2006, National Chemical Laboratory, Pune – 411008 INDIA.
- J. PrakashaReddy, “Understanding the physical mechanism of a solid-state reaction: Polymerization of metal propynoates”. Poster presentation at the American Chemical Society 234th National Meeting & Exposition, August 19-23, 2007, Boston, MA, USA.
- J. PrakashaReddy, “Single Crystal to Single Crystal Transformations Involving Coordination Bond Formation and Breaking”. Poster presentation at the RSC macrocyclic and supramolecular chemistry symposium Dec 15-16, 2014, university of Norwich, UK.

WORKSHOP/TRAINING

- BCA/CCG Ninth Intensive Course in X-ray Structure Analysis, 7–15 April 2003, University of Durham, UK.
- Small molecule and macromolecular Bruker X-ray workshop and conference at MIT, 28-29 Jan 2008, MA, USA.
- Faculty development Program for student induction (FDP-SI) June 30 - July 6, 2018, by AICTE, GTU, Ahmedabad, Gujarat.

PATENTS/ TECHNOLOGY TRANSFER

- NIL

OTHER INFORMATION

Reviewer : Dalton transactions, Molecular pharmaceuticals, Crystal growth and design, CrystEngComm, Journal of molecular structure, Acta crystallography journals, European journal of inorganic chemistry, New journal of chemistry, etc.