List of PubLications

1. Comprehensive Study of Twelve H_3BPPC-based Lanthanide Complex Showing Unprecedented Variable Nuclearity and Their Spectroscopic and Magnetic Properties
Sukhen Bala and Raju Mondal (*Manuscript under preparation*)

2. Synthesis and Characterization of Transition Metal Complexes Using a Pyridine-Pyrazole Based N_8O-type ligand and their properties
Sukhen Bala and Raju Mondal (*Manuscript under preparation*)

3. Pyrazole based two isostructural Cu_{30} cages with two type's secondary building units and their properties
Sukhen Bala and Raju Mondal (*Manuscript under preparation*)

4. A novel gel-based technique for controlled synthesis of silver nanoparticles showing efficient catalysis and dual colorimetric sensing of mercury(II) and Cr(VI) ions
Sukhen Bala and Raju Mondal (*Manuscript submitted*)

5. Co-MOF as sacrificial template: Manifesting new Co_3O_4/TiO_2 system with p-n heterojunction for photocatalytic hydrogen evolution
Sukhen Bala, Indranil Mondal, Arijit Goswami, Ujjwal Pal and Raju Mondal
J. Mater. Chem. A, 2015, *3*, 20288-20296

6. Construction of Polynuclear Lanthanide (Ln= Dy(III), Tb(III), Nd(III)) Cage Complexes using novel Pyridine-Pyrazole based ligands: Versatile Molecular Topologies and SMM behavior
Sukhen Bala, Mousumi Sen Bishwas, Bhaskar Pramanik, Sumit Khanra, Katharina M. Fromm, Pankaj Poddar, and Raju Mondal
Inorg. Chem., 2015, *54*, 8197–8206

7. Designing Functional Metal-Organic Frameworks by Imparting a Hexanuclear Copper Based Secondary Building Unit (SBU) Specific Properties: Structural Correlation With Magnetic and Photocatalytic Activity

Sukhen Bala, Sudeshna Bhattacharya, Arijit Goswami, AmitAdhikary, Sanjit Konar and Raju Mondal

Crystal Growth & Design, 2014, *14*, 6391−6398

8. Synthesis, crystal structure and optical properties of naphthylbisimide-Ni complex: A framework on TiO_2 for visible light H_2 production

Sukhen Bala, Indranil Mondal, Arijit Goswami, Ujjwal Pal and Raju Mondal

Dalton Trans, 2014, *43*, 15704-15707

9. Construction of Bis-pyrazole Based Co(II) Metal–Organic Frameworks and Exploration of Their Chirality and Magnetic Properties

Sudeshna Bhattacharya, Arijit Goswami, BappadityaGole, Sumi Ganguly, **Sukhen Bala**, Satirtha Sengupta, Sumit Khanra, and Raju Mondal

Crystal Growth & Design, 2014, *14*, 2853–2865

10. Pyrazole-Based Metallogels Showing an Unprecedented Colorimetric Ammonia Gas Sensing through Gel-to-Gel Transformation with a Rare Event of Time-Dependent Morphology Transformation

Sudeshna Bhattacharya, Satirtha Sengupta, **Sukhen Bala**, Arijit Goswami, Sumi Ganguly and Raju Mondal

Crystal Growth & Design, 2014, *14*, 2366–2374

11. Comprehensive Study on Mutual Interplay of Multiple V-Shaped Ligands on the Helical Nature of a Series of Coordination Polymers and Their Properties

Arijit Goswami, **Sukhen Bala**, PradipPachfule, and Raju Mondal

Crystal Growth & Design, 2013, *13*, 5487–5498

12. Metal-Directed Formation of Molecular Helix, Cage, and Grid Using an Asymmetric Pyridine-Pyrazole Based Bis-Chelating Ligand and Properties

Sukhen Bala, Arijit Goswami, Satirtha Sengupta, Sumi Ganguly, Sudeshna Bhattacharya, Sumit Khanra, and Raju Mondal

Crystal Growth & Design, 2013, *13*, 5068–5075

13. Azide-Functionalized Lanthanide-Based Metal–Organic Frameworks Showing Selective CO2 Gas Adsorption and Postsynthetic Cavity Expansion

Sumi Ganguly, PradipPachfule, **Sukhen Bala**, Arijit Goswami, Sudeshna Bhattacharya, and Raju Mondal

Inorg. Chem., 2013, *52*, 3588–3590

14. Construction of Co(II) coordination polymers comprising of helical units using a flexible pyrazolebased ligand

Satirtha Sengupta, Sumi Ganguly, Arijit Goswami, **Sukhen Bala**, Sudeshna Bhattacharya and Raju Mondal

CrystEngComm,2012, *14*, 7428-7437

15. Influence of chlorochloro interaction and π-π stacking in 3D supramolecular framework construction

Satirtha Sengupta, Arijit Goswami, Sumi Ganguly, **Sukhen Bala**, Manas Kumar Bhunia and Raju Mondal

CrystEngComm, 2011, *13*, 6136-6149

Corrections/Modifications of the thesis as suggested by the examiner

1. The uniformity regarding the headings and names has been maintained throughout the thesis.

2. The crystal system has been modified in page no. 42 as suggested by the examiner.

3. As suggested by the examiner, the crystal structures are labelled with a single format throughout thesis.

4. The table 6.3 (page 111) has been modified.

5. A note has been added for high R-factor of Co-TA and Co-DHTA (page no. 187).

6. The page no. 26 has been modified with following sentence “Powder X-ray diffraction (PXRD) measurement was characterised using” was replaced by “Powder X-ray diffraction (PXRD) measurement was carried out using”

7. N_8O has been defined in the abstract of chapter 3 in page no 28.

8. The Schiff base spelling was corrected.

9. The ‘in this paper’ has been replaced by ‘in this chapter’ wherever applicable.