



## FACULTY PROFILE

### BASIC PROFILE

#### DR. MALAY DOLAI

**Assistant Professor**

**Dept. of Chemistry**

*dolaimalay@yahoo.in*

Contact No: 9051089438

Academic Qualification: M.Sc, Ph.D



### SERVICE HISTORY

<b>Year of Joining</b>	:	2017
<b>Previous Employment, if any</b>	:	Gazetted-A, Ordnance Factory of Khamaria, Jabalpur, Indian Ordnance Factory, Ministry of Defence, Govt. of India.
<b>Experience in Teaching</b>	:	

**Area of Teaching:** Inorganic Chemistry and Physical Chemistry: Lanthanide Chemistry, Organometallics, Transition metal Chemistry, Solid State Chemistry, Magneto-structural Chemistry and Nuclear Chemistry

**Area of Specialization:** Inorganic Chemistry

**Participation in Administrative activities:**

### RESEARCH PROFILE

- Area of Research Interest:** Design and synthesis of mononuclear and multinuclear compounds of transition metals as well as lanthanides.
- Development of metal based single-chain magnet (SCM) and single molecule magnet (SMM).
- Solvent dependent chemical transformation reactions of oximes and nitriles in presence of metal ions/complexes as catalyst.
- Study on novel supramolecular interactions through details analysis of single crystals X-ray diffraction data using APEX-III and WinGX programs.

DFT-TDDFT computational analysis and geometry optimization via Gaussian 09W software package.

<b>Research Experience</b>	1. National Post-doctoral fellow (DST-SERB), Department of Chemistry, University of Calcutta, Kolkata, India (July 2016 to June 2017). Research is continued at Prabhat Kumar College, Contai, Purba Medinipur.
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**Conference/Seminar/Workshop Organized:**

**Projects ongoing / completed:**

Title	Funding Agency	Year	Amount (Rs.)

**Fellowship (s) / Award (s):** Junior Research Fellowship (JRF) (2010-2012) in Joint CSIR-UGC National Eligibility Test (NET- December 2009).

Senior Research Fellowship (SRF) (2012-2015).

National Post-doctoral Fellowship award (DST-SERB, July, 2016-June, 2017)

**Involvement in other research activities:**

**Supervisor:**

**Adjudicator:**

**Reviewer:**

**Involvement in Academic/ Professional Organizations:**

**Editorial Board Member:**

**Publications:**

**Books :****Edited Books:****Chapters in Books :**

[Malay Dolai](#), *THE CRYSTALLOGRAPHIC EVIDENCES OF THE DIFFERENT COORDINATION MODE OF A NON-SCHIFF BASE HEXADENTATE LIGAND WITH Co(IV): TALLY WITH OTHER TRANSITION METALS*, *CRYSTALLOGRAPHIC EVIDENCES OF THE DIFFERENT COORDINATION MODE OF A NONSCHIFF BASE HEXADENTATE LIGAND WITH Co(IV): TALLY WITH OTHER TRANSITION METALS*, **'The Importance of Intermolecular Interaction in Solid-state X-ray Crystal Structures'**, 2016, New Academic Publishers, New Delhi (2016), ISBN: 9788186772898, Chapter-8, page no.-122-131.

**Journals:**

[Malay Dolai](#), Asma Amjad, Mainak Debnath, Johan van Tol, Enrique del Barco and Mahammad Ali, "Water-Stable Manganese(IV) Complex of a  $N_2O_4$  - Donor Non-Schiff- Base Ligand: Synthesis, Structure, and Multifrequency High-Field Electron Paramagnetic Resonance Studies", **Inorganic Chemistry**, 2014, 53, 5423-5428.

2) [Malay Dolai](#), Tarun Mistri, Surajit Biswas, Guillaume Rogez, and Mahammad Ali "Solvent-Dependent Oxime–Azide and Oxime–Nitrile Coupling: Crystallographic and Catalytic Studies", **ChemPlusChem**, 2014, 79, 1649.

3) [Malay Dolai](#), Tarun Mistri, Anangamohan Panja, and Mahammad Ali, "Diversity in supramolecular self-assembly through hydrogen-bonding interactions of non-coordinated aliphatic –OH group in a series of heterodinuclear  $Cu^I M$  ( $M=Na^I, Zn^{II}, Hg^{II}, Sm^{III}, Bi^{III}, Pb^{II}$  and  $Cd^{II}$ )", **Inorganica Chimica Acta**, 399 (2013) 95.

4) [Malay Dolai](#) and Mahammad Ali "Two new twisted helical nickel(II) and cobalt(III) octahedral monomer complexes: Synthesis and Structural Characterization" **Journal of Chemical Science**, 2014, 126 (6), 1647.

5) Ishita Banerjee, [Malay Dolai](#), Atish Dipankar Jana, Kalyan K. Das and Mahammad Ali, " $\sigma$ -Aromaticity in dinuclear copper(II) complexes: Novel interaction between perchlorate anion and  $\sigma$ -aromatic  $[Cu_2X_2]$  ( $X = N$  or  $O$ ) core" **CrystEngComm**, 2012, 14, 4972-4975.

6) Tarun Mistri, [Malay Dolai](#), Debrup Chakraborty, Anisur Rahman Khuda-Bukhsh, Kalyan Kumar Das and Mahammad Ali, "A highly selective and sensitive in vivo fluorosensor for zinc(II) without cytotoxicity" **Org. Biomol. Chem.**, 2012, 10, 2380-2384.

7) Tarun Mistri, Rabiul Alam, [Malay Dolai](#), Sushil Kumar Mandal, Anisur Rahman Khuda-Bukhsh and Mahammad Ali, "A 7nitrobenz-2-oxa-1,3-diazole based highly sensitive and selective turn-on chemosensor for copper(II) ion with intracellular application without cytotoxicity" **Org. Biomol. Chem.**, 2013, 11, 1563-1569.

8) Sumana Gangopadhyay, Tarun Mistri, [Malay Dolai](#), Rabiul Alam and Mahammad Ali, "Chemistry of transition metal carbene complexes: nucleophilic substitution reactions of cyanamide anion to Fischer carbene complexes" **Dalton Trans.**, 2013, 42, 567-576.

9) Surajit Biswas, Arpan Dutta, Mainak Debnath, [Malay Dolai](#), Kalyan K. Das and Mahammad Ali, "A novel thermally stable hydroperoxo–copper(II) complex in a  $Cu(N_2O_2)$  chromophore of a potential  $N_4O_2$  donor Schiff base ligand: synthesis, structure and catalytic studies" **Dalton Trans.**, 2013, 42, 13210-13219.

10) Tarun Mistri, Rabiul Alam, Rahul Bhowmick, Sushil Kumar Mandal, [Malay Dolai](#), Anisur Rahman Khuda-Bukhsh and Mahammad Ali, "A simple rhodamine-based dual signalling reversible molecular switch for recognition of Al(III) with Promising applications for advanced logic operations – 'OR', 'Keypad Lock' & 'INHIBIT' logic function and cell imaging studies" **Analyst**, 2014, DOI: 10.1039/C3AN02255B.

11) Tarun Mistri, Rabiul Alam, [Malay Dolai](#), Sushil Kumar Mandal, Pratik Guha, Anisur Rahman Khuda-Bukhsh and Mahammad Ali, "Rhodamine-Based Chromo-/Fluorogenic Dual Signalling Probe for Selective Recognition of Hg(II) with Potential Applications for INHIBIT Logic Devices and Cell- Imaging Studies" **Eur. J. Inorg. Chem.**, 2013, 5854.

12) Surajit Biswas, Arpan Dutta, [Malay Dolai](#), Indrani Bhowmick, Mathieu Rouzières, Hon Man Lee, Rodolphe Clérac, and Mahammad Ali, "Dinuclear  $Cu^I-Cu^I$  and  $Cu^I-Cu^{II}$  Complexes of a Compartmental Ligand – Syntheses, Structures, Magnetic and Catalytic Studies" **Eur. J. Inorg. Chem.**, 2013, 4922.

13) Abhimanyu Jana, Atish Dipankar Jana, Indrani Bhowmick, Tarun Mistri, [Malay Dolai](#), Kalyan Kumar Das, Anangamohan Panja and Mahammad Ali, "First crystallographic report on a novel 2D layer of water pentagons: L5(7) water motif enclathrating  $[Co(cyclam)Cl_2]$ ", **Inorg. Chem. Comm.** 24 (2012) 157.

14) Surajit Biswas, Arpan Dutta, [Malay Dolai](#), Mainak Debnath, Atish Dipankar Jana and Mahammad Ali, "Copper(II)



induced oxidative modification and complexation of a schiff base ligand: synthesis, crystal structure, catalytic oxidation of aromatic hydrocarbons and DFT calculation" **RSC Adv.**, 2014, 4, 34248.

15) Rahul Bhowmick, [Malay Dolai](#), Rabiul Alam, Tarun Mistri, Atul Katarkar, Keya Chaudhuri and Mahammad Ali, "A novel pyrene-2-(pyridin-2-ylmethylsulfanyl)ethylamine based turn-on dual sensor for  $Al^{3+}$ : experimental and computational studies" **RSC Adv.**, 2014, 4, 41784-41792.

16) Saugata Konar, Urmila Saha, [Malay Dolai](#), Sudipta Chatterjee, "Synthesis of 2D polymeric dicyanamide bridged hexacoordinated Cu(II) complex: Structural characterization, spectral studies and TDDFT calculation" **Journal of Molecular Structure**, 2014, 1075, 286.

17) Arpan Dutta, Surajit Biswas, [Malay Dolai](#), Bikash Kumar Shaw, Abhishake Mondal, Shyamal Kumar Saha, and Mahammad Ali, "Mononuclear manganese(III) complexes of bidentate NO donor Schiff base ligands: synthesis, structural characterization, magnetic and catecholase studies" **RSC Adv.**, 2015, 5, 23855-23864.

18) Arpan Dutta, Surajit Biswas, [Malay Dolai](#), Albert Escuer, Subhadip Ghosh, and Mahammad Ali, "Synthesis, crystal structures, magnetic and catalytic studies on a novel linear trinuclear  $Mn^{II}_3$  complex" **ChemPlusChem**, 2015, 80, 1440 – 1447.

19) Surajit Biswas, Arpan Dutta, [Malay Dolai](#), Indrani Bhowmick, Mathieu Rouzières, Rodolphe Clérac, and Mahammad Ali, "Novel  $Cu^{II}-M^{II}-Cu^{II}$  ( $M = Cu$  or  $Ni$ ) trinuclear and  $[Na'_2Cu''_6]$  hexanuclear complexes assembled by bi-compartmental ligands: syntheses, structures, magnetic and catalytic studies" **Dalton trans**, 2015, 44, 9426-9438.

20) [Malay Dolai](#), Mahammad Ali, Ján Titiš, and Roman Boča, "Cu(II)-Dy(III) and Co(III)-Dy(III) based single molecule magnets with multiple slow magnetic relaxation processes in Cu(II)-Dy(III) complex" **Dalton trans**, 2015, 44, 13242-13249.

21) [Malay Dolai](#), Surajit Biswas, Albert Escuer, and Mahammad Ali, " $Mn^{II}$ - and  $Co^{II}$ -Catalyzed Transformation of 2-Cyanopyrimidine to Methylimidate by Sodium Azide: Isolation, Structural Characterization, and Magnetic Studies on 2D  $Mn^{II}$ - and  $Co^{II}$ -Complexes" **Inorganic Chemistry**, 2015, 54, 7030-7037.

22) Rabiul Alam, Kaberi Pal, Bikash Shaw, [Malay Dolai](#), Nabanita Pal, Shyamal Kumar Saha and Mahammad Ali, "Synthesis, Structure, Catalytic and Magnetic properties of Pyrazole based five coordinated di-nuclear Co (II) complex" **Polyhedron**, 106 (2016) 84–91.

23) Abhimanyu Jana, [Malay Dolai](#), Bikash Shaw, Shyamal Kumar Saha, and Mahammad Ali, "Two new mononuclear cobalt(II) complexes of pyrazole-based ligands: synthesis, structures and magnetic studies" **Transition Met Chem**, (2016) 41, 347– 355.

24) Luna Paul, [Malay Dolai](#), Anangamohan Panja, and Mahammad Ali, "Hydrothermal Synthesis of Two Supramolecular Inorganic Organic Hybrid Phosphomolybdates based on Co (II)/ Ni (II), Structure Characterization and Heterogeneous Catalytic Property" **New J. Chem.**, 2016, 40, 6931-6938.

25) Surajit Biswas, [Malay Dolai](#), Arpan Dutta, and Mahammad Ali, "Synthesis, structural characterization and DFT calculation on a square-planar Ni(II) complex of a compartmental Schiff base ligand" **J. Mol.Str.**, 2016, 1125, 688-695.

26) [Malay Dolai](#), Abhishake Mondal and Mahammad Ali, "Three novel mononuclear Mn(III)-based magnetic materials with square pyramidal versus octahedral geometries" **New J.Chem.**, 2017, 41, 10890-10898.

27) [Malay Dolai](#), Rabiul Alam, Atul Katarkar, Keya Chaudhuri, Mahammad Ali, "Oxime Based Selective Fluorescent Sensor for Arsenate ion in a Greener Way with Bio-Imaging Application" **Analytical Science**, 2016, 32, 1295-1300.

28) [Malay Dolai](#), Habib Ali Molla, Tarun Mistri, Guillaume Rogez, Mahammad Ali, "Two  $[Mn_3(\mu_3-O)]^{7+}$  based single chain magnets with different solvent ligation" **Polyhedron**, 2017, 127, 248–256.

29) Mainak Debnath, [Malay Dolai](#), Kaberi Pal, Sourav Bhunya, Ankan Paul, Hon Man Lee and Mahammad Ali, "Mono- and dinuclear oxidovanadium(V) complexes of an amine-bis(phenolate) ligand with bromo-peroxidase activities: synthesis, characterization, catalytic, kinetic and computational studies" **Dalton Trans.**, 2018, 47, 2799-2809.

30) Subhabrata Mabhai, [Malay Dolai](#), Satyajit Dey, Anamika Dhara, Bhiguram Das and Atanu Jana, A novel chemosensor based on rhodamine and azobenzene moieties for selective detection of  $Al^{3+}$  ion, **New J. Chem.**, 10.1039/C8NJ00436F.



**Conf. Proceedings:**

- (i) Attended the National Seminar on Inorganic Chemistry-2011 and The celebration of 150<sup>th</sup> Birth Anniversary of Acharya P. C. Ray, held in the Department of Chemistry, Jadavpur University, Kolkata- 700032 during July 8-9<sup>th</sup>, 2011.
- (ii) Attended and presented the poster the International Symposium on Recent Trends of Research in Chemistry, held at Department of Chemistry, Midnapore College, Midnapore(W), on 31<sup>st</sup> October-1<sup>st</sup> November, 2011.
- (iii) Attended and presented the poster the National Seminar on Recent Trends in Research and Teaching in Chemical Science, held at Department of Chemistry, Panskura Banamali College, Midnapore(E), on 17-18<sup>th</sup> January, 2012.
- (iv) Attended the National Seminar on Recent Advances in Chemistry (NSRAC- 2012) held in the Department of Chemistry, Jadavpur University, Kolkata- 700032 during February 10-11, 2012.
- (v) Attended the National Conference on Sustainable Development through Innovative Research in Science and Technology held in the Department of Chemistry, Jadavpur University, Kolkata- 700032, on September 28-29, 2012.
- (vi) Attended the International Workshop on Introduction to Gaussian: Theory and Practice held in the Department of Chemistry, Delhi University, New Delhi on December 17-22, 2012.
- (vii) Attended the 7<sup>th</sup> RSC-CRSI Symposium in Chemistry held at Dept. of Chemistry, Banaras Hindu University, Varanasi, Uttar Pradesh- 221005 on 31<sup>st</sup> January, 2013.
- (viii) Attended and presented a poster at the CRSI 15<sup>th</sup> National Symposium in Chemistry (NSC-15) held at Dept. of Chemistry, Banaras Hindu University, Varanasi, Uttar Pradesh- 221005 on 1<sup>st</sup>-3<sup>rd</sup> February, 2013.
- (ix) Attended the National Seminar on Social Science-2013 and The Celebration of 150<sup>th</sup> Birth Anniversary of Swami Vivekananda held at Faculty of Science, Jadavpur University, Kolkata- 700032, on 14<sup>th</sup> June, 2013.
- (x) Attended and presented a poster at the 4<sup>th</sup> International Conference of World Science Congress held in the Department of Chemistry, Jadavpur University, Kolkata- 700032 during December 12-14<sup>th</sup>, 2013.
- (xi) Attended and presented a poster at the National Conference on Photo-sciences: Contemporary Challenges and Future Perspectives held in the Department of Chemistry, Jadavpur University, Kolkata- 700032 during December 16-18, 2014.
- (xii) Attended the International Symposium on Modern Trends in Inorganic Chemistry, (MTIC-XVI), held at Jadavpur University, Kolkata-700032, on 3-5<sup>th</sup> December, 2015.
- (xiii) Attended the International Symposium on 'Facets of Chemistry in Biology(FOCB)-II', held at Department of Chemistry, St. Xavier's College, Kolkata, on 12<sup>th</sup> January, 2017.
- (xiv) Attended the National Symposium on 'Emerging Trends in Chemistry (ETC-2017)', held at Jadavpur University, Kolkata-700032, on 15<sup>th</sup> February, 2017.

**Any other relevant information**

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