

## Data related to Research and Extension (2018 – 2023)

### 1. – Resource Mobilization for Research

(Grants Received)

A research grant of Rs. 2,75,000.00 in the F.Y. 2022-23 (of the total Rs. 18,30,000.00 in three years) has been received as a part of the award “Teachers Associateship for Research Excellence” by Science and Engineering Research Board, Govt. of India. The sum of Rs. 2,49,339.00 has been spent to purchase a 32-core LINUX work-station and Rs. 25,000.00 is kept as institute overhead.

### 2. Research, Publication and Award

**2.1** No. of Ph.Ds registered : One (01) has been registered in the University of North Bengal and the undersigned is acting as the co-supervisor.

Note: Application to act as individual supervisor has been declined by the Calcutta University even after positive recommendation by C.U RAC committee and reason was shown as not having post-graduation course and necessary infra-structure in the college.

**2.2** No. of Research Papers in the said duration: Seventeen (17)

- 1) Electrochemical generation of high-valent oxomanganese complexes featuring an anionic N5 ligand and their role in O—O bond formation, (2023), Sachidulal Biswas, Srijan Narayan Chowdhury, Panjo Lepcha, Subhankar Sutradhar, Abhishek Das, Tapan Kanti Paine,\* **Satadal Paul\*** and Achintesh Narayan Biswas,\* *Dalton Transactions*, **52**, 16616-16630 DOI: <https://doi.org/10.1039/D3DT02740F>
- 2) 3D Cyclophane for the Selective Conversion of Epoxide to Cyclic Carbonate, (2023), Rahul Roy; Archita Kar, **Satadal Paul**, Sudip Mahapatra, Sushobhan Ghosh, *Journal of Organic Chemistry*, **88**, 14388 – 14395, DOI: <https://doi.org/10.1021/acs.joc.3c01286>.
- 3) Catalytic Four-Electron Reduction of Oxygen to Water by a Molecular Cobalt Complex Consisting of a Proton Exchanging Site at the Secondary Coordination Sphere, (2023), Avijit Das; Afsar Ali; Geetika Gupta; Aakash Santra; Priya Jain; Pravin P. Ingole; **Satadal Paul\***; Sayantan Paria,\* *ACS Catalysis*, **13**, 8, 5285 - 5297, DOI: [10.1021/acscatal.3c00822](https://doi.org/10.1021/acscatal.3c00822), **13**, 5285 - 5297
- 4) Advancing insights towards electrocatalytic activity of La/Ba-Sr-Co-Fe-O-based perovskites for oxygen reduction & evolution process in reversible solid oxide cell (2023), Shoroshi Dey; Suman Das; Saroj Chaudhary; Damaraju Parvatalu; Madhumita Mukhopadhyay; **Satadal Paul**; Abhijit Das Sharma; Jayanta Mukhopadhyay\*, *Scripta Materialia*, **229**, 115380. DOI: [10.1016/j.scriptamat.2023.115380](https://doi.org/10.1016/j.scriptamat.2023.115380)

- 5) A Theoretical Account of the Coupling between Metal- and Ligand-centred Spins (2023), Sriparna Roy; **Satadal Paul\***; Anirban Misra\*, *Chem. Phys. Chem.* 24, e202200889. DOI: <https://doi.org/10.1002/cphc.202200889>
- 6) Highly Luminescent and Semiconducting Supramolecular Organic Charge Transfer Complex Generated via H-Bonding Interaction Pathway (2023), Sushobhan ghosh; Sudip Sarkar; **Satadal Paul**; Suranjan Shil; Sudip Mohapatra; Achintesh Narayan Biswas; Gobinda Chandra De, *Crystal Research and Engineering*. 58, 2200228, DOI: <https://doi.org/10.1002/crat.202200228>
- 7) A Cobalt(III)–Hydroxo Complex Bearing a Pentadentate Amidate Ligand as an Electrocatalyst for Water Oxidation (2022), Panjo Lepcha; Sachidulal Biswas; Srijan Narayan Chowdhury; Suranjana Bose; Joyashish Debgupta; **Satadal Paul**; Achintesh N. Biswas, *European Journal of Inorganic Chemistry*. 26, e202200611 DOI: :10.1002/ejic.202200611
- 8) Dioxygen Activation and Mandelate Decarboxylation by Iron(II) Complexes of N4 Ligands: Evidence for Dioxygen-Derived Intermediates from Cobalt Analogues (2022), Rahul Dev Jana, Biswarup Chakraborty, Sayantan Paria, Takehiro Ohta, Reena Singh, Sourav Mandal, **Satadal Paul**, Shinobu Itoh, Tapan Kanti Paine\*, *Inorganic Chemistry*, 61, 27, 10461- 10476. (27.06.2022), DOI: [10.1021/acs.inorgchem.2c01308](https://doi.org/10.1021/acs.inorgchem.2c01308)
- 9) Selective Oxygenation of C-H and C=C Bonds with H<sub>2</sub>O<sub>2</sub> by High-Spin Cobalt(II)-Carboxylate Complexes (2022), Ivy Ghosh, Biswarup Chakraborty, Abhijit Bera, **Satadal Paul**, Tapan Kanti Paine, *Dalton Transactions*, 51, 2480-2492. (30.12.2021) DOI: [10.1039/D1DT02235K](https://doi.org/10.1039/D1DT02235K)
- 10) Electrochemical Properties and Reactivity Study of [Mn<sup>V</sup>(O)(μ-OR–Lewis Acid)] Cores (2021), Geetika Gupta, Moumita Bera, **Satadal Paul**, Sayantan Paria, *Inorganic Chemistry*, 60, 18006 – 18016. DOI: [acs.inorgchem.1c02601](https://doi.org/10.1021/acs.inorgchem.1c02601) (23.11.2021)
- 11) Spectral Tuning of 11-cis retinal in conjugation with Au<sub>14</sub> cluster and concomitant effect on isomerization: a theoretical outlook (2021), Banita Sinha, Tamal Goswami, **Satadal Paul**, Anirban Misra, *Journal of Photochemistry and Photobiology*, 7, 100051. DOI: [10.1016/j.jpap.2021.100051](https://doi.org/10.1016/j.jpap.2021.100051) (sept, 2021)
- 12) Spin-polarized electrical transport in transition metal encapsulated C<sub>20</sub>fullerenes: A theoretical account (2020), Sudip Sarkar, **Satadal Paul\***, Anirban Misra\*, *Chemical Physics Impact*, 1, 100002. DOI: <https://doi.org/10.1016/j.chphi.2020.100002>
- 13) **Oxygen Reduction Assisted by the Concert of Redox Activity and Proton Relay in a Cu(II) Complex (2020)**, Srijan N. Chowdhury, Sachidulal. Biswas, Purak Das, **Satadal Paul\***, Achintesh N. Biswas\*, *Inorganic Chemistry*, 59, 14012 – 14022. DOI: <https://doi.org/10.1021/acs.inorgchem.0c01776>

- 14) A High Spin Mn (IV)-Oxo Complex Generated via Stepwise Proton and Electron Transfer from Mn (III)-Hydroxo Precursor: Characterization and C-H Bond Cleavage Reactivity (2019), Sachidulal Biswas, Amrita Mitra, Sridhar Banerjee, Reena Singh, Abhishek Das, Tapan Kanti Paine, Pinaki Bandyopadhyay, **Satadal Paul\***, Achintesh N Biswas\*, *Inorg. Chem.* 58 (15), 9713 – 9722. DOI: [10.1021/acs.inorgchem.9b00579](https://doi.org/10.1021/acs.inorgchem.9b00579)
- 15) Highly Selective and Catalytic Oxygenations of C-H and C=C Bonds by a Mononuclear Nonheme High-Spin Iron(III)-Alkylperoxy Species (2019), Ivy Ghosh, Sridhar Banerjee, **Satadal Paul**, Teresa Corona, and Tapan Kanti Paine\* *Angew. Chem. Int. Ed.* 58 (36), 12534 – 12539. DOI: [10.1002/anie.201906978](https://doi.org/10.1002/anie.201906978)
- 16) Manifestation of exo-cyclic aromaticity in triangular heterocyclic B<sub>2</sub>F<sub>2</sub>X (X=O, S, Se, NH) (2019), Manoswita Homroy, Satadal Paul, Anirban Misra,\* *Bull. Mat. Science*, 42(2). 46
- 17) Ligand-induced symmetry breaking and concomitant blueshift in the emission wavelength of an octahedral chromium complex (2018), Manoj Majumder, Satadal Paul, Anirban Misra,\* *J. Mol. Model.* 24, 230.

### 2.3 No. of Book and Chapters in edited volumes: Two (02)

1. Book : Theoretical Investigation on Magnetic Behaviour in Metal – based Systems  
 Publisher : LAP LAMBERT Academic Publishing (April 15, 2019)  
 ISBN-13: 978-6200007049  
 ISBN-10: 6200007047  
 URL: <https://www.amazon.com/Theoretical-investigation-magnetic-behaviour-metal-based/dp/6200007047>
2. Book Chapter: Mathematical Modeling and Simulation of Exchange Coupling Constant (J) and Zero-Field Splitting Parameters (D) (2022) in *Fundamentals of Low Dimensional Magnet*, Eds. (R.K.Gupta, S.R.Mishra, T.A.Nguyen)  
 Publisher : Taylor and Francis (CRC Press)  
 eBook ISBN: 9781003197492  
 DOI: <https://doi.org/10.1201/9781003197492>

### 3. Extension activities

#### 3.1

- (i) The undersigned is teaching post-graduate courses in Chemistry in the Scottish Church College as a guest faculty.
- (ii) The undersigned has taken physical practical class of the Bangabasi Evening College as a part of the MoU.
- (iii) The undersigned has acted as M.Sc thesis supervisor of two students from the Amity University.

### 3.2 Collaboration

The undersigned is engaged in research activities in collaboration with the following scientists from different institutes as follows:

- (i) Dr. Dimitrios Pantazis, Max Planck Institute for Kohlenforschung, Germany
- (ii) Prof. Tapan K. Paine, Indian Association for Cultivation of Science, Kolkata
- (iii) Prof. Achintesh N. Biswas, NIT Sikkim
- (iv) Dr. Sayantan Paria, IIT Delhi
- (v) Dr. Sushobhon Ghosh, Alipurduar University
- (vi) Prof. Jayanta Mukhopadhyay, CGCRI, Kolkata
- (vii) Dr. Soumik Bardhan, Jadavpur University, Kolkata.

The collaborations are evidenced through the research publications and electronic communication.

Dr. Satadal Paul  
Assistant Professor  
Department of Chemistry  
Bangabasi Morning College