



**S N BOSE NATIONAL CENTRE
FOR BASIC SCIENCES**

Block JD, Sector III, Salt Lake, Kolkata 700 106

DEPARTMENTAL SEMINAR

Chemical and Biological Sciences

18th February, 2025

4.00 PM

ONLINE / FERMION

SPEAKER



Dr. Debashis Adhikari, Associate Professor
Department of Chemical Sciences, IISER – Mohali

Short bio :

Debashis completed his Masters from IIT Kanpur and Ph.D. from Indiana University, Bloomington followed by a postdoctoral stint in Northwestern University. Before coming back to India, he taught at Indiana University as a lecturer. He started his independent career in 2016 as an Assistant professor at IISER Mohali and has now risen to the rank of associate professor. His group is mainly focused on utilizing redox-active backbones for base metal catalysis and performing small molecule activation as well as chemical transformations triggered by light. The group strives to understand the detailed electronic structure of molecules both via spectroscopic methods and computational means with the aim of further designing the catalyst.

TITLE OF THE TALK

Mechanistically guided catalyst development for organic transformations

ABSTRACT

Redox-active ligands play a predominant role along with a transition metal to steer important organic transformations. The major advantage of such ligands is their property to hold or release electrons on demand. Many such systems are emerging where ligand plays a preponderant role to leave the metal to act as a template. In this lecture, we will showcase multiple such systems, their spectroscopic details to infer electronic structure, and how such electronic structure remains responsible for a specific chemical transformation. A thorough mechanistic study will lay out the design principle for suitable catalysts for dehydrogenation, bond cleavage, and cyclization reactions.

References:

1. Adhikari and co-workers; ACS Catal. 2024, 14, 17993-18002.
2. ACS Catal. 2024, 14, 8939-8948.
3. ACS Catal. 2024, 14, 8087-8095.