

## **Internal Webinar**

### **Pincer-type Pyridine-Based ENE (E=S, Se) and NHC Hybrid Ligands; Synthesis to Catalytic Studies of their Metal Complexes**

**Bhagyashree Das**

**IISER, Berhampur**

Pincer ligands featuring N-heterocyclic carbenes (NHCs) and phosphines offer distinct electronic and steric properties. ENE-type (E=S, Se) and N,N,C-type systems remain significantly underexplored in coordination chemistry, catalysis, and stabilising reactive and elusive main group species. With this motivation, we investigated their metal coordination behaviour: *ENE* ligands ((BPPP)E<sub>2</sub>, (BPPMP)E<sub>2</sub>) form multinuclear Cu/Ag complexes showing cuprophilic /argentophilic interactions and catalytic alkyne cyclisation. Additionally, *N,N,C* type NHC ligands are utilised to stabilise Group 16 sulfenyl/selenenyl cations and yield di-, and tri-cationic Cu complexes active in methyl transfer and A<sup>3</sup>-coupling. Ag and Ru complexes further exhibited reactivity in CO<sub>2</sub>/CS<sub>2</sub> activation and nitrile-to-amide conversion, underscoring the untapped potential of these ligand platforms.

**Monday, May 5<sup>th</sup> 2025**

**14:30 Hrs**

