

## **Internal Webinar**

### **Reactivity of Hybrid Silylene and mNHC Toward Transition Metal Complexes**

**Ruksana Akhtar**

**IISER, Pune**

N-heterocyclic tetrylenes (NHTs) are neutral divalent group-14 species that exhibit ambiphilic behaviour due to a lone pair and a vacant p-orbital. They have emerged as powerful ligands in low-valent main-group and transition-metal chemistry, enabling advances in catalysis, small-molecule activation, and materials science. While NHCs are widely established, NHSi (N-heterocyclic silylenes) and mNHCs (Mesoionic N-heterocyclic carbenes) remain far less explored, particularly in photophysical applications. To address this gap, phosphine-based hybrid silylenes were coordinated to 3d-metal halides, revealing redox-active complexes with unusual magnetic behaviour, including low-temperature superparamagnetism. Their reactivity was further extended by treating functionalised silylenes with organoazides, leading to silaimines and silazides. The unexplored photophysical potential of mNHCs was also demonstrated through the isolation of carbene-coinage metal-amide photoemitters, highlighting NHTs as versatile ligands for future functional materials.

**Monday, Feb 9<sup>th</sup> 2026**

**14:30 Hrs**

