TIFR Centre for Interdisciplinary Sciences
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Internal Seminar

Formamidines as Precursors for Metal Formamidine / Triazapentadiene Complexes and Backbone Functionalized Imidazolidines / Imidazolinium Salts: Synthesis, Structure, Reactivity and Applications in Catalysis

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Though the coordination chemistry in general has come a long way since its inception by Alfred Werner, synthesis of new ligands and their metal complexes with novel properties has been an important area of research in inorganic chemistry all along. Making sterically demanding and electronically tunable ligands with different binding atoms, varying denticities, with convergent and divergent binding sites and subsequently employing their complexes for various applications are some of the ways in which the coordination chemists have been trying to push the boundaries farther and farther. Among all the diverse classes of ligands known, amidinates provide a rich chemistry of complexes with main group, transition metals and lanthanides, due to their easily tunable steric and electronic properties which can be achieved by changing the substituents at nitrogen and carbon centers. Their metal complexes show wide variety of application in the areas of catalysis and materials science. Further, amidines are one of the important precursors for synthesis of triazapentadienes (tap) and N-heterocyclic carbenes (NHCs). The aim of the present work is to utilize formamidine as the starting material for synthesis of metal-tap complexes, functionalized imidazolidine and zwitterionic imidazolinium salts. Further, metal amidinate complexes have been employed for the activation of small molecules such as nitrile, carbon disulphide, alky/aryl isothiocynate and isonitrile. Apart from this, coordination chemistry of functionalized imidazolidines was studied with various metal precursor and π-acceptor properties of newly synthesized NHCs were evaluated using ^{77}Se NMR. In addition, palladium complexes were utilized for Suzuki–Miyaura coupling.

Wednesday, Feb 8th 2017

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS