National Institute of Technology Rourkela

Progress Seminar

Seminar Title	: Exploring the chemistry of transition and main group metal complexes incorporating O- and/or N- and/or S- donor ligands and unravelling their biological potentials
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Supervisor	: Prof. Rupam Dinda
Venue	: : Chemistry Department Seminar Room
Date and Time	: 29 Jan 2025 (4 PM)
Abstract	: The strategic design and synthesis of ligands featuring O- and/or N- and/or S- donor atoms have been used in advancing the coordination chemistry of both main group and transition metal complexes. By systematically exploring the structural versatility and coordination preferences of these ligands, one can examine their crucial role in modulating the properties and reactivities of metal complexes. Among transition metals, vanadium received significant attention in the research community due to the fascinating chemistry of variable valence vanadium complexes and their biological relevance. Despite the extensive exploration of variable valence vanadium complexes, the biological applications of vanadium(V) species remain relatively scarce in the literature. Also, among the platinum group metals, ruthenium, and iridium complexes have demonstrated promising anticancer activity, making them compelling candidates for further exploration in developing bioactive ligand systems. Again, among the main group metal complexes, organotin(IV) compounds have garnered attention for their pharmaceutical value and biological activity. However, very limited research exists on the cytotoxicity and bioimaging properties of tin (Sn) complexes. So, the plan could aim to design novel tin metal complexes with improved photophysical characteristics and explore their anticancer and bioimaging properties depending on their extent of cytotoxicity. The observations mentioned above inspired me to carry out research work comprising the design and synthesis of novel main group (Sn) and transition (V, Ru, and Ir) metal complexes featuring new O- and/or N- and/or S- donor ligands and examine their biological properties (MTT assay, nuclear staining, cell cycle analysis, apoptosis studies, ROS generation, and cellular imaging) with different bioactive coordination environment.