National Institute of Technology Rourkela

Defence Seminar

Seminar Title	: Functionalization of Ferrocenyl Molecules for Bridged Architectures: Synthesis, Structure, Sensing and Amyloid Inhibition
Speaker	: Biplob Halder (Rollno : 519cy1005)
Supervisor	: Prof. Saurav Chatterjee
Venue	: Chemistry Seminar Room
Date and Time	: 18 Dec 2024 (09:15 AM)
Abstract	: In the last two-three decades, ferrocenyl chemistry has undergone remarkable advancement, positioning itself as a highly versatile building block with applications spanning medicinal chemistry, material science, catalysis, sensing and electronic communication. Recent studies indicate that the meticulous design and functionalization of ferrocenyl analogues across various structural levels can significantly tune their electronic, structural and biological properties. Among the widely known ferrocenyl derivatives, mono-functionalized ferrocenyl derivatives are extensively investigated, whereas research on bi-functionalized ferrocenyl frameworks remains limited. Moreover, the synthesis of symmetrical and unsymmetrical 1,1&rsquo-bifunctionalized bridged ferrocenyl architectures with rotational flexibility led to molecular systems endowed with exceptional biological, sensor-based and catalytic properties, with a range of different conformational orientations. The immense potentials of functionalized/bridged ferrocene-based organometallic derivatives and the scarcity of suitable reaction conditions prompted us to adopt a solid-supported reaction methodology to synthesize a diverse range of flexible and rigid heterocycle and carbocycle linked bridged ferrocenyl derivatives, along with di and tri ferrocenyl molecular architectures. The thesis bridges these gaps by pioneering a solid-supported reaction methodology to synthesize a diverse array of multifunctional ferrocene-based organometallic systems encompassing, heterocycle and carbocycle tethered ferrocenyl molecules, heterocycle functionalized diastereomeric carba[3]ferrocenophanes, azine bridged di- and tri-ferrocenyl molecular frameworks and enone bridged tri-ferrocenyl system along with their characterization and structural evaluation.