Talk Title: Main Group Organometallics: From Synthesis to Catalysis

Abstract: In recent years, the chemistry of main-group organometallic compounds has undergone a significant expansion, mirroring the versatility of transition metals. This expansion is fueled by their unique bonding and electronic structures, as well as their diverse reactivity, which holds promise for catalytic and materials science applications. The discovery of novel synthetic methodologies, advances in characterization techniques, and the development of theoretical models have all contributed to this growth. Furthermore, main-group organometallics offer several advantages over transition metals, including lower toxicity, reduced cost, and high natural abundance in the earth's crust. These factors make them increasingly attractive for a wide range of applications. In this talk, I will discuss the synthetic strategies I have developed to manipulate the electronic structures of main-group element organometallic compounds and their capabilities in bond activation reactions involving small molecules such as H_2, NH_3, and CO_2. Furthermore, I will discuss my future research plans in the rapidly evolving field of main-group organometallic chemistry.

Speaker:

Dr. Mahendra K. Sharma

University of Duisburg-Essen, Germany