



香港中文大學化學系
Department of Chemistry
THE CHINESE UNIVERSITY OF HONG KONG

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Department of Chemistry Research Seminar Series



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RIKEN Pioneering
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Japan

Innovations in Organo Rare-Earth and Titanium Chemistry: From Self-Healing Polymers to N₂ Activation

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Innovations in Organo Rare-Earth and Titanium Chemistry: From Self-Healing Polymers to N₂ Activation

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In this lecture, I will introduce our recent studies on the development of innovative organometallic complexes and catalysts aimed at realizing unprecedented chemical transformations and advancing functional polymer synthesis. Representative achievements include the creation of novel self-healing polymers through sequence-controlled olefin copolymerization enabled by organo rare-earth catalysts; regio- and stereoselective C–H functionalization by tuning the ligand/metal combination of rare-earth catalysts; and the activation and functionalization of dinitrogen (N₂) by well-defined multimetallic titanium hydride complexes. These studies highlight the pivotal role of catalyst design in modern chemical synthesis. Looking ahead, further exploring the potential of organometallic complexes and catalysts in a wide range of chemical transformations will continue to drive new advances in synthetic methodology and functional polymer synthesis, laying the foundation of next-generation technologies for a sustainable society.