OIST OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY GRADUATE UNIVERSITY

OIST SEMINAR

Prof. Jun Okuda
RWTH Aachen University,
Institute of Inorganic Chemistry, Germany

Date: Friday, March 17, 2023
Time: 14:00-15:00
Venue: C209, Center Building, Level C

"From Metallocenes to Post-Metallocene Polymerization Catalysts"

One of the most important industrial polymerization catalysts is the heterogeneous Ziegler-type catalyst that produces linear high-density polyethylene and isotactic polypropylene. The introduction of zirconocene catalysts led to the understanding of the polymerization mechanism on the molecular level. Other structurally well-defined organometallic catalysts such as [OSSO]-type bis(phenolato) group 4 metals allowed living and isospecific styrene polymerization, including the synthesis of optically active oligomers. These post-metallocene catalysts were furthermore suitable for the study of stereoselective polymerization of cyclic esters such as lactide. From the standpoint of ligand design, the evolution of [OSSO]-type bis(phenolato) group 3 and 4 metals will be discussed.

Keywords: Ziegler-Natta Catalyst; Metallocene Catalyst; Stereoselective Styrene Polymerization; Ring-Opening Polymerization of Lactide

Professor Jun Okuda, born in Osaka/Japan in 1957, received his Dr. rer. nat. degree at the RWTH Aachen University in 1984 with G. E. Herberich and was a Postdoctoral Associate at MIT with R. R. Schrock (Nobel laureate 2005). After his habilitation at the Technical University Munich in 1991, he held academic positions at the State University of New York at Albany, the University of Marburg, and of University of Mainz, before assuming the Chair of Organometallic Chemistry at the RWTH Aachen University in 2003.
He received the Heinz-Maier-Leibnitz Award 1991 by the German Minister of Science and Education and was Fellow of the Japan Society for the Promotion of Science in 1996. From 2007 to 2010 he was chairman of the Wöhler Inorganic Chemistry Division of the German Chemical Society. From 1996 to 2003 he served as selection committee member of the Alexander von Humboldt Foundation and from 2003 to 2008 he was an elected member of the committee Molecular Chemistry" of the German Research Foundation (DFG). From 2010 to 2019 he was coordinator for the DFG/JSPS funded International Research Training Group "Selectivity in Chemo- and Biocatalysis" with Osaka University, Japan. In 2013, he was elected a member of the North Rhine-Westphalian Academy of Sciences, Humanities and the Art, he became Fellow of the Royal Society of Chemistry in 2014 and received an honorary doctorate from Osaka University in 2018. His research interests include organometallics as polymerization catalysts, artificial metalloenzymes, and energy storage systems. He has published more than 375 papers and holds 10 patents.