

**Title**            **Synthesis of Propene from Ethene or Bio-ethanol**

**Speaker**        **Prof. Masakazu Iwamoto**  
Professor  
Frontier Research Center and Chemical Resources Laboratory  
Tokyo Institute of Technology



**Date & Time**    **Friday, Dec. 14, 2012    4:00 p.m.**

**Place**            **INAMORI Hall, Ito campus, Kyushu University**

### Abstract

Lower olefins with two, three, and four carbons are key building blocks for manufacturing plastics and chemicals. Although these olefins are currently produced by the cracking of naphtha, there are increasing demands for alternative and renewable feedstock, due to the environmental issues. Propene production is notably desirable, owing to the increasing needs for propene derivatives. That is, the conversion of ethene or bio-ethanol to propene is one of the important research targets, since the former is easily produced from ethane in natural gas and the latter is particular biomass-based feedstock. Catalytic conversion of ethene or ethanol has widely been reported on zeolites using the shape selectivity, but the selectivity toward propene was approximately 20-30 % and decreased with reaction time. We developed Ni ion-loaded mesoporous silica and scandium-supported In<sub>2</sub>O<sub>3</sub> catalysts for the respective reactions. On the former catalyst, ethene was converted to propene through dimerization, isomerization, and metathesis. With Sc/In<sub>2</sub>O<sub>3</sub>, the reaction pathway was CH<sub>3</sub>CH<sub>2</sub>OH → CH<sub>3</sub>CHO → (CH<sub>3</sub>C(O)OH →) CH<sub>3</sub>C(O)CH<sub>3</sub> → CH<sub>2</sub>=CHCH<sub>3</sub>. The present lecture will introduce our recent studies on these two topics.

### About the Speaker

Professor Masakazu Iwamoto was born in 1948 in Shimabara, Nagasaki, and given education of applied chemistry at Kyushu University. After he received his BT, MT, and DT degrees from the Kyushu University, he obtained a research position at the Nagasaki University in 1976. He worked as a research assistant, an assistant professor, and an associate professor for the University. In 1987, he was invited as a full professor in the Department of Industrial Chemistry at Miyazaki University. He joined in Catalysis Research Center of Hokkaido University in 1990 and then in Chemical Resources Laboratory of Tokyo Institute of Technology in 2000. He received various awards such as 3 Awards from the Chemical Society of Japan, 3 Awards from the Catalysis Society of Japan, the 1993 Crompton Lanchester Medal of the Royal Institute of Mechanics, the 2007 Award of the Minister of Monbushou, and the 2010 Imperial Award with a purple ribbon. He was the 2008-2011 president of the Asia Pacific Council of Catalysis Societies. His current research efforts are focused on the heterogeneous catalysis including environmental chemistry and biomass refinery.

**Host: Professor Tatsumi ISHIHARA**

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CONTACT: Research Support and International Affairs division  
International Institute for Carbon-Neutral Energy Research  
TEL:092-802-6934 email:wpikenkyu@jimu.kyushu-u.ac.jp