

Title **Preparation of Catalyst Layers for Enhanced Performance in Low Temperature Fuel Cells**

Speaker Prof. Hasuck Kim

Professor
 Faculty of Energy Systems Engineering
 Daegu Gyeongbuk Institute of Science and Technology
 KOREA



Date & Time Friday, January 10, 2014 4:00 p.m.

Place I²CNER Hall, Ito campus, Kyushu University

Abstract

Many agree that the future energy will be hydrogen after the recent energy crisis which brought us to reconsider seriously about possible alternatives after fossil fuel for mankind. There are abundant sources for hydrogen-water, and it burns to form water. However, in order for us to adopt the new energy system, many hurdles have to be overcome. They are how to produce hydrogen economically, ways to store and transport safely, and ways to generate electricity efficiently, to name a few. Electrochemical generation of hydrogen needs a high overvoltage, thus, it is a very expensive way at the moment. Also, storage and transport require many fundamental researches. Fuel cell is the most efficient way of using hydrogen.

Fuel cells have been received a considerable interest as power sources because they exhibit high energy efficiency and are environmentally friendly. Despite these advantages, fuel cells in general need to overcome economic barriers for wide applications. Main barriers are the cost of materials such as platinum used in catalysts and proton conducting polymer. Catalysts are the core material for fuel cell and many attempts have been made to find out the most active, efficient and durable formulae in the MEA preparation step.

In this respect, works performed in our group for fuel cell catalysts will be summarized, they are preparation of catalysts by galvanostatic pulse electrodeposition on Nafion-bonded carbon layer, and effect of carbon supports for catalysts. Improved catalytic performance by choosing appropriate flow channels in the support was also observed.

Also in this presentation, energy statistics and efficient way of use energy, and possible future energy scheme in addition to research activities at the Department of Energy Systems, DGIST will be discussed.

About the Speaker

Professor Hasuck Kim is currently the Chair Professor of Daegu Gyeongbuk Institute of Science and Technology (DGIST), a newly established research oriented graduate school and Professor Emeritus of Seoul National University (SNU) where he had retired after 33.5 years of service. He is the President of the International Society of Electrochemistry (ISE) till the end of 2014.

He received his BS from the Department of Chemistry, SNU, MS and Ph.D. from the University of Illinois at Urbana-Champaign. He spent 2 years at the University of Florida as a research associate. He, then, was appointed as an Assistant Professor in 1977 at SNU where he was a full Professor since 1987. He spent a year at the Division of Chemistry and Chemical Engineering, California Institute of Technology as a visiting associate in 1988. He was the Dean of College of Natural Sciences, SNU from 2002 to 2004. He was the Vice-President and Dean of Graduate School of SNU until August 2010. He had served as the Vice-President of the Korean Chemical Society in 2001, President of the Korean Electrochemical Society from 2000 for two years. He is a member of board of trustee, Korea Academy of Science and Technology.

As for editorial services, he is a regional editor of Fuel Cells and editorial board member of Journal of Electroanalytical Chemistry and Analytical Sciences.

His research interests are development of electroanalytical methods based on molecular recognition and molecular switching, and electrochemistry for fuel cells. He has published more than 170 refereed original papers, and 19 patents were registered or filed. He was awarded the Q. Won Choi Prize, Korean Chemical Society in 2003, Outstanding Achievements in Natural Science from Metropolitan Seoul City in 2008. He is a fellow member of the Korean Academy of Science and Technology in Natural Sciences and a fellow of the ISE.

Host: Professor Naotoshi Nakashima

For registration, please visit our website:
<http://i2cner.kyushu-u.ac.jp/>

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

