



Academic Lecture



State Key Laboratory
of Chemical Resource Engineering

High-Throughput Screening (HTS) and Combinatorial Method augmented by AI for R&D

报告人: Prof. Seong Ihl Woo
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地点: 工程楼A203

报告简介:



Combinatorial methods are now being widely spread to develop advanced functional materials for catalysis, fuel cell, polymers, electronic device, sensors and display. If these exists a huge experimental variable space, millions of samples should be rapidly prepared, characterized and evaluated to find the quantitative structure-activity relationship. Library work-up and library design should be done by data mining and artificial intelligence. Optical high-throughput-screening method was used to find novel anode (Pt₇₇Ru₁₇Mo₄W₂) and noble methanol-tolerant cathode (Pt₅₀Ru₁₀Fe₂₀Se₁₀) for direct methanol fuel cell. Binary and ternary Pt clusters containing Co and Fe were found to be highly active in SCR of NO. Lithium-air Battery (Li-air) is a device that uses the oxidation of lithium at the anode and reduction of oxygen at the cathode to induce a current flow. HTS of Pd based alloy cathode will be introduced. The library of Bi_{4-x}La_xTi₃O₁₂ (BLT) or Bi_{4-x}Ce_xTi₃O₁₂ (BCT) for FRAM capacitor was fabricated with multi-target sputtering system. ANN with multiple layer artificial intelligence was used to predict the composition of best Pr and Ec.

报告人简介:

Dr. Seong Ihl Woo is Professor of the Department of Chemical & Biomolecular Engineering at Korea Advanced Institute of Science & Technology (KAIST). He obtained his PhD degree at University of Wisconsin-Madison in 1983. He is a Humboldt Research Professor at Max Planck Institute from 1990-1991. His research is focused on heterogeneous catalysis, nano-materials and combinatorial chemistry, and an emphasis on understanding synthesis-structure-property relationships in heterogeneous catalysis. He is the Chairman of the Scientific Committee of 14th International Congress on Catalysis (14th ICC). He serves on the ChemSusChem, Catal. Lett. and Topics Catal. editorial board.

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