

GIST Professors Sukwon Hong and Ji Young Jo receive Prime Minister's Commendation on Science and Information & Communications Day

- Professor Sukwon Hong of the Department of Chemistry secures source technology for sustainable catalysts to realize greenhouse gas conversion and carbon neutrality... Professor Ji Young Jo of the Department of Materials Science and Engineering establishes foundation for the development of next-generation new materials through precise control of material structures and elucidation of physical phenomena



▲ (From left) Professor Sukwon Hong of the Department of Chemistry and Professor Ji Young Jo of the Department of Materials Science and Engineering

The Gwangju Institute of Science and Technology (GIST, President Kichul Lim) announced that Professor Sukwon Hong of the Department of Chemistry and Professor Ji Young Jo of the Department of Materials Science and Engineering received the Prime Minister's Commendation in recognition of their contributions to creating world-class research achievements, in celebration of the 59th Science Day (April 21) and the 71st Information and Communications Day (April 22).

Professor Professor Sukwon Hong of the Department of Chemistry was recognized for his contributions to the development of new catalyst technology capable of precisely controlling the three-dimensional structure of molecules.

Catalysts are substances that accelerate the speed of chemical reactions or facilitate desired reactions, and they are utilized in the production of most chemical products, including pharmaceuticals, plastics, and fuels.

The "cooperative catalyst" proposed by Professor Hong is a new concept designed for two reactants to interact simultaneously with a single catalyst; by enabling the precise realization of complex chemical reactions, it has opened up new possibilities for organic synthesis.

In addition, by developing catalytic technology that produces high-value compounds using biomass (biological resources) such as vegetable oil or waste cooking oil, it has presented an eco-friendly raw material utilization technology that can replace petroleum-dependent chemical processes. Recently, it has developed a technology that combines ethylene (C_2H_4) and carbon dioxide (CO_2) to produce acrylates, which is attracting attention as an eco-friendly process that converts greenhouse gases into useful substances.

Professor Ji Young Jo of the Department of Materials Science and Engineering was recognized for his contributions in leading innovation in materials technology through over 20 years of convergence research based on solid-state physics.

Professor Cho contributed to the development of core material technologies—such as ferroelectrics, piezoelectrics, and thermoelectric materials—and the securing of source technologies for energy conversion in the field of functional oxide thin film materials used for energy conversion, such as generating electricity or converting heat into electricity. These research achievements are evaluated as having laid the foundation for the development of next-generation electronic devices and future-oriented new materials.

Furthermore, he established ultra-high-speed X-ray analysis technology, the only one in Korea with sub-nanosecond time resolution. Utilizing this technology, he has precisely analyzed the microstructural changes and dynamic behavior of oxide and thin film materials by observing internal structural changes in materials at extremely short time intervals.

In addition, based on research on the precise control of boundary structures between nano-thick films, he contributed to the advancement of basic science by elucidating the relationship between the structure and physical properties of thin film materials. This included being the first in the world to identify that performance improves when different thermoelectric materials are alternately stacked to a thickness of tens of nanometers.

Professor Sukwon Hong stated, “Developing catalyst technology capable of replacing existing petroleum-based chemical processes by utilizing various carbon resources such as ethylene, carbon dioxide, and biomass is highly significant in that it lays the foundation for producing high-value compounds more environmentally friendly and efficiently.” He added, “I will continue to contribute to industrial transformation through the development of sustainable chemical processes and materials technology.”

Professor Ji Young Jo said, “I feel a sense of accomplishment knowing that the research I have dedicated over the past 20 years to functional oxide thin films—which elucidated energy conversion mechanisms and laid the groundwork for next-generation electronic device technology—has served as the foundation for subsequent research.” She further stated, “I will continue to strive to develop new materials for the future based on research that precisely understands structural changes and physical phenomena of materials.”