

GIST opens a joint Battery and Hydrogen Research Center, the 'Heart of Future Energy': Advancing Korea's next-generation energy research and fully responding to national demonstration projects

- Professor Sangryun Kim (chemistry) appointed as Director of the Battery and Electrochemistry Research Center, and Professor Sanghan Lee (materials engineering) appointed as Director of the Hydrogen and Photoelectrochemical Energy Conversion Research Center... Integrated research on core battery and hydrogen technologies, from electrodes and electrolytes to photoelectrodes and catalysts
- Faculty from four GIST departments (Department of Chemistry, Department of Materials Science and Engineering, Department of Mechanical and Robotics Engineering, and Department of Environment and Energy Engineering) participated... Promoting the establishment of a demonstration platform linked to national demonstration projects and the Gwangju-Jeonnam RE100 Industrial Complex through collaboration among industry, academia, research institutes, and government agencies



▲ Attendees pose for a commemorative photo at the joint opening ceremony of the GIST Battery and Hydrogen Research Center.

The Gwangju Institute of Science and Technology (GIST, President Kichul Lim) announced the joint opening of the "Battery and Electrochemistry Research Center" (Director: Professor Sangryun Kim, Department of Chemistry) and the "Hydrogen and Photoelectrochemical Energy Conversion Research Center" (Director: Professor Sanghan Lee, Department of Materials Science and Engineering) to lead next-generation energy technologies in the battery and hydrogen fields and respond to national energy demonstration projects.

The opening ceremony was held on Friday, November 28th, at the GIST Research Institute for Solar and Sustainable Energies. Approximately 50 people*, including GIST faculty, local government officials, industry representatives, and research institutes, attended the event to discuss cooperation to advance next-generation battery and hydrogen technologies.

The event began with welcoming remarks from Director KwangSup Eom of the Research Institute for Solar and Sustainable Energies, followed by congratulatory remarks from Vice President for R&DB Yong-Chul Kim and President Je-jeong Yoon of the Gwangju Institute for Advanced Energy Promotion. Center Directors Sangryun Kim and Sanghan Lee then presented the center's founding principles, GIST's research capabilities, and plans for linking it with national demonstration projects.

Experts from industry, academia, research, and government shared their commitment to building a collaborative ecosystem centered around GIST, embracing the need for validation, evaluation, and policy coordination for battery cell, electrode, and electrolyte materials, as well as photoelectrochemical-based hydrogen conversion technologies.

* participating institutions: Gwangju Metropolitan City Hall, Korea Industrial Complex Corporation, Korea Institute of Materials Science, Korea Institute of Industrial Technology, AI Industry Convergence Business Group, Korea Photonics Technology Institute, and approximately 20 other organizations.



▲ Sangryun Kim, Director of the Battery and Electrochemistry Research Center (left), and Sanghan Lee, Director of the Hydrogen and Photoelectrochemical Energy Conversion Research Center (right), introduce the center's vision and research and demonstration plans to attendees at the opening ceremony.

The two newly opened research centers plan to integrate core source technologies and demonstration and evaluation systems in the battery and hydrogen fields, including: ▲ next-generation battery electrochemistry, ▲ development of electrode and electrolyte materials, ▲ high-energy-density and high-safety cell structures, ▲ photoelectrochemical-based hydrogen production (PEC), ▲ catalyst and photoelectrode materials, and ▲ establishment of campus and industrial complex demonstration infrastructure.

Furthermore, in conjunction with national demonstration projects, Gwangju and South Jeolla Province will serve as a battery and hydrogen demonstration hub, and joint research with the regional RE100 industrial complex will also be conducted.

The research will involve Center Directors Sangryun Kim and Sanghan Lee, as well as faculty from four departments at GIST (Department of Chemistry, Department of Materials Science and Engineering, Department of Mechanical and Robotics Engineering, and Department of Environment and Energy Engineering).

They will pursue core research in the battery and hydrogen field, including battery electrodes, electrolytes, and hydrogen photoelectrochemical materials, high-efficiency hydrogen production systems, demonstration of next-generation energy conversion technologies, and AI-based analysis. They will also establish a collaborative system among industry, academia, research institutes, and government agencies.

Battery technology is a key area that determines the competitiveness of the national energy system. GIST will leverage its electrochemistry and materials capabilities to lead the development and demonstration of next-generation cell technologies.

Sangryun Kim, Director of the Battery and Electrochemistry Research Center, stated, "Battery technology is a key area that determines the competitiveness of the national energy system. Leveraging GIST's expertise in electrochemistry and materials, we will lead the development and demonstration of next-generation cell technologies. We will collaborate with industry and public institutions to contribute to the development of high-safety, high-performance battery technology."

Director Kim received his doctorate under the guidance of Professor Ryoji Kanno of Tokyo Institute of Technology, a global pioneer in all-solid-state secondary batteries. Since then, he has expanded the connection between academia, industry, and policy by conducting research on all-solid-state batteries in Korea and Japan and serving as a judge for publications such as 《Nature Energy》 and 《Advanced Materials》, as well as participating in related academic societies.

Sanghan Lee, Director of the Hydrogen and Photoelectrochemical Energy Conversion Research Center, stated, "Photoelectrochemical-based hydrogen production technology is a key strategic area for achieving carbon neutrality, and GIST holds a global leadership position." He added, "We will lead domestic hydrogen technology innovation by strengthening our core technologies and demonstration base, including photocatalysts, photoelectrodes, and reaction systems."

Since assuming his position at GIST in 2013, Director Lee has been actively conducting international collaborative research in the field of hydrogen and energy materials. He has published numerous papers in international journals such as 《Advanced Materials》 and 《Advanced Energy Materials》, and serves as an expert member of related academic societies, bridging research and policy.



▲ Unveiling a plaque at the joint opening ceremony of the GIST Battery and Hydrogen Research Center. (Left) Sangryun Kim, Director of the Battery and Electrochemistry Research Center; Director KwangSup Eom of the Research Institute for Solar and Sustainable Energies; (Right) Sanghan Lee, Director of the Hydrogen and Photoelectrochemical Energy Conversion Research Center; Director KwangSup Eom of the Research Institute for Solar and Sustainable Energies

With the joint opening of the Battery and Hydrogen Research Center, GIST plans to pursue various initiatives, including establishing a campus demonstration site, demonstrating battery and hydrogen technologies in conjunction with local RE100 industrial complexes, and expanding joint research by inviting domestic and international experts. Through these initiatives, GIST aims to establish a battery and hydrogen research and demonstration hub centered around the Gwangju and Jeonnam regions and actively enhance the national competitiveness of energy transition technologies.

