Gwangju Institute of Science and Technology
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Professor Eunji Lee selected as a Samsung Future Technology Development Project

□ GIST (President Kiseon Kim) School of Materials Science and Engineering Professor Eunji Lee research about 'in-situ self-assembly/medium-based multi-dimensional aqua nanoparticles uniformity study using liquid phase electron microscope' was selected as a Samsung Future Technology Development Project, * which is supported by Samsung Electronics.

> * In 2013, Samsung Electronics used 1.5 trillion won to establish the Samsung Future Technology Foundation (Basic Science) and the Samsung Future Technology Development Center (materials science and ICT). Samsung Electronics has invested about 718.2 billion won in top-notch researchers studying promising future technologies. A total of 560 projects were supported, and in the second half of this year, a total of 26 projects were selected, including 7 in basic sciences, 10 in materials science, and 9 in the ICT research field.

◦ Samsung Electronics announced on October 7, 2019, that it has selected a total of 10 projects including GIST Professor Lee Eunji Lee's project for the materials science field after three reviews by experts evaluating documents and presentations. In addition to the projects that can contribute to strengthening industrial competitiveness, such as semiconductor materials, various research tasks such as material analysis and cancer diagnosis/analysis were also selected.

□ Professor Eunji Lee research team uses the e-beam of the transmissive electron microscope as an energy support for molecular chemistry to induce molecular self-

assembly and polymerization in aqueous solution. To develop a technology platform capable of spatial-temporal imaging of the nanoparticles being formed, KAIST formed a team of researchers and collaborators for a strategic approach to organic-polymer design that is sensitive to e-beams.

- Organic nanoparticles are highly noted for their variety of applications as biomedical and photoelectronic materials, such as drug delivery, imaging probes, bio-sensors, biologic, photo-catalytic, photovoltaic cells, smart fibers, and wearable devices, but the complexity and sensitivity of molecular behavior during the solution process makes it difficult to synthesize particles with a uniform shape. This makes it difficult to develop reproducible and reliable manufacturing technology even if high functional materials have been developed. Therefore, Professor Lee's research team proposed this project.

□ GIST Professor Eunji Lee said, "Based on self-assembly of organic and polymers using molecular programming and research on the control of multi-dimensional nanoparticles, we have been working on developing functional organic nanomaterials. Through this task, the goal is to develop technology for manufacturing solution process of multi-dimensional organic nanoparticles with uniform shape by identifying and controlling the dynamic behavior of aqueous solution of highly complex organic and polymers."

□ Professor Eunji Lee's previous research have been published in Nature Communications, Journal of the American Chemical Society, ACS Nano, Advanced Functional Materials. Professor Lee's project will start in December this year and will receive 1.1 billion won in total funding for the next three years.

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