

Dr. Junghoon Yeom

Assistant Professor

Department of Mechanical Engineering

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Dr. Junghoon Yeom is an assistant professor in the Department of Mechanical Engineering. He joined the Mechanical Engineering faculty in August 2013.

Dr. Yeom's research interests lie in nanomaterial synthesis, nanomanufacturing, and nanodevice fabrication, with a focus on the development of new chemical sensing modalities, gas sensor development for environmental monitoring, and process intensification for efficient energy conversion.

In particular, by investigating the fundamental science and engineering involved in efforts to miniaturize gas detection systems, Dr. Yeom's immediate research objective is to confer a "sense of smell" to mobile robots with autonomous tracking and wireless communication. This new dimension of sensing will allow the mobile robots to undertake more sophisticated tasks – real-time detection of a gas leak, volatile distribution mapping in agricultural or territorial lands, and remote explosive detection.

One of the areas that may benefit from this gas-sensitive mobile robot is precision agriculture – helping farmers use the right amount of resources (water, fertilizers, and pesticides/herbicides) at precise locations and exact times and reduce reliance on chemical inputs. Agricultural drones equipped with remote sensing systems as well as the gas detection system could be a game changer in precision farming, due to their non-invasive nature and their ability to make early-stage diagnosis of crop status.

Global research interests

- Confer a "sense of smell" to mobile robots by integrating a miniaturized gas detection system into them
- Gas-sensitive drones in precision agriculture and environmental monitoring

Geographic focus

- Europe