KAIST Department of Mechanical Engineering

Open Positions for Ph.D. Program at KAIST

While nanoscale structures and dimensions enable a wide range of applications, the cost and effort of fabrication still hinders academic popularity and commercial viability. Bottom-up approaches suffer from limited uniformity, and top-down approaches mostly rely on high-end nanofabrication facilities, which are generally expensive and slow. To achieve highly uniform structures and dimensions at the nanoscale, together with large-scale or mass production capability, we need to think outside the box. Unconventional nanofabrication routes that exploit exotic or even undesirable phenomena such as crack propagation, thermal decomposition and self-assembly may be one of the most promising directions for mechanical engineers to follow. The Manufacturing and Instrumentation Laboratory at KAIST is currently developing a novel and unique unconventional nanomanufacturing based on high-temperature annealing with various pure and compound semiconductor materials. Highly uniform semiconductor nanostructures including particles (0D), wires (1D) and membranes (2D) can be fabricated using our proprietary techniques. We aim to produce specialised wafers such as silicon-on-insulator (SOI) without conventional ion implantation and splitting, crack-free silicon nanoparticles for reliable battery anode materials, next-generation 3D transistors and hyper-multimodal sensing platforms.

The Manufacturing and Instrumentation Laboratory (Prof. Lee's Google Scholar Profile: https://scholar.google.co.kr/citations?user=jaaKsBQAAAAJ&hl=en) in the Department of Mechanical Engineering at KAIST is seeking for highly motivated Ph.D. students in the area of ***Nanomanufacturing and Precision Metrology***. Applicants must have completed M.S. degree in Mechanical Engineering, (Applied) Physics, Materials Science, Electrical Engineering or other related disciplines. More detailed information about Graduate Admissions at KAIST can be found at https://admission.kaist.ac.kr/intl-graduate. Applicants who have basic knowledge and training of microfabrication, MEMS, instrumentation are highly preferred.

Specific research topics of interest include but are not limited to

- *Unconventional nanomanufacturing towards cost-effective large-scale or mass production*

- *High precision and resolution instrumentation via hyper-multimodal sensing platforms*

Review of applications will begin immediately and will continue until positions are filled. Interested applicants should send a **CV with a list of publications** and a brief **research statement with future plans** to Prof. Jungchul Lee (jungchullee@kaist.ac.kr).