

Beginning to actively research at the end of 1980, MEMS (Micro Electro Mechanical System) technology was expected to adapt by many different fields because of its vast untapped potential. Recently there is an attempt to integrate the MEMS technology into biological application, which requires high marketability and technological solubility.

Nano & BioMEMS Laboratory (NBL) was established at February of 2004 by professor Lim, Geunbae whose accomplishment includes world-first 'Active Catheter' in 1996, which can travel in a blood stream, and first successful commercialization of Micro PCR in 2003, which can detect viruses using MEMS technology.

Our research areas are categorized mainly in three.

First, determining a phenomenon of Biomolecules, and cell, our goal is to measure DNA, protein and cell signals by biosensor and to output the result with electrical signal. The current research topic on the area is Aptamer and cell sensor using nano-transistor.

Second is micro-reaction technique to control bio-molecules. The current research topic includes micro reactor, and regulation of cell control factor within a micro chamber for pharmaceutical evaluation.

Third, we are researching on Brain-machine interface (BMI) using high-sensitive nanowire tools to measure extremely small signal of a neuron in-vivo condition.

Our laboratory is applying a statial method upon uncertain bio- and nano-signal to mathematically handle them easily and to have clear specificity.

Geun Bae Lim



Education

Ph.D. 1996 Tohoku Univ.
M.S. 1992 Youngnam Univ.
B.S. 1990 Youngnam Univ.

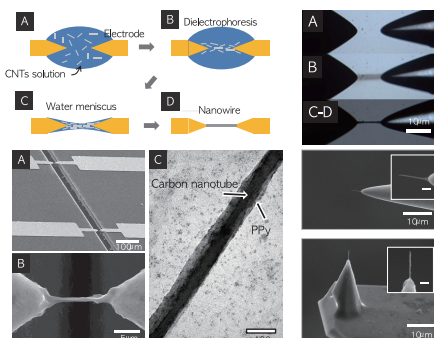
Experience

1996~2004 Project Manager, Technology Leader, SAIT
1999~2002 Next Generation New Tech. Project Leader, Ministry of commerce, Industry and Energy (\$15Million)

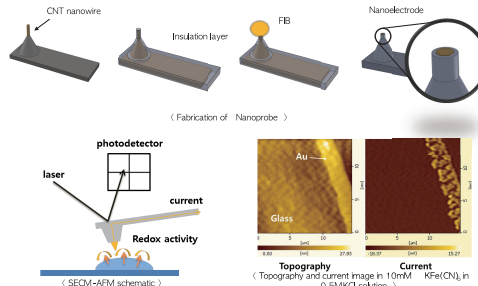
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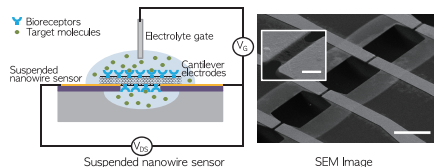
NANOWIRE SYNTHESIS



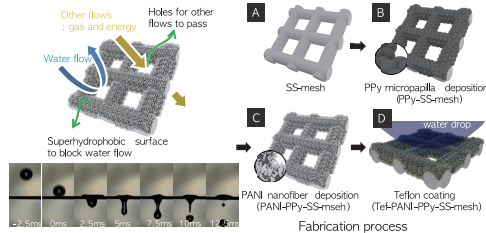
NANOELECTRODE APPLICATIONS



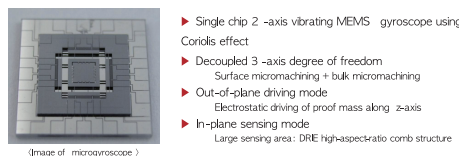
NANO-BIOSENSORS



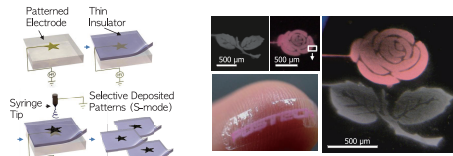
NANOSTRUCTURED HYDROPHOBIC MESH



MULTI-AXIS MEMS GYROSCOPE



CONTROL OF ELECTROSPUN FIBROUS STRUCTURE



Major Publications

- Taechang An, Seong J. Cho, WooSeok Choi, Jin Ho Kim, Soo Taek Lim and Geunbae Lim ; Preparation of stable superhydrophobic mesh with a biomimetic hierarchical structure ; Soft Matter ; Vol. 7, pp. 9867-9870, 2011 ; Top Ten most-read Soft Matter articles in September (RSC Publishing).
- Seong J. Cho, Taechang An, Jin Young Kim, Jungwoo Sung, and Geunbae Lim ; Superhydrophobic Nanostructured Silicon Surfaces with Controllable Broadband Reflectance ; CHEMICAL COMMUNICATIONS ; Vol. 47, pp. 6108-6110, 2011.
- Taechang An, Ki Su Kim, Sei Kwang Hahn, and Geunbae Lim ; Real-time, step-wise, electrical detection of protein molecules using dielectrophoretically aligned SWNT-film FET aptasensors ; Lab on a Chip ; Vol. 10, pp. 2052-2056, 2010.
- Seong J. Cho, Bumjoo Kim, Taechang An, and Geunbae Lim ; Replicable Multilayered Nanofibrous Patterns on a Flexible Film ; Langmuir ; Vol. 26, pp. 14395-14399, 2010.
- Bumjoo Kim, Intae Kim, Sang W. Joo, Geunbae Lim ; Electrohydrodynamic repulsion of droplets falling on an insulating substrate in an electric field ; Applied Physics Letters ; Vol. 95, p. 204106, 2009.

