



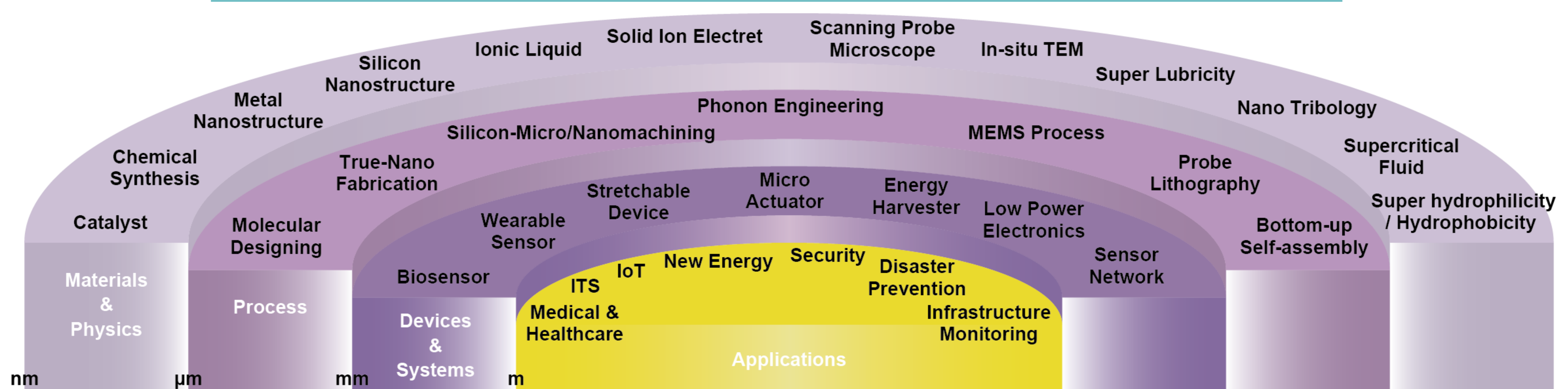
Centre for Interdisciplinary Research on Micro-Nano Methods (CIRMM)

Materials Engineering
Mechanical Engineering
Precision Engineering Department
Department of Advanced Interdisciplinary Studies
Department of Electrical Engineering and Information Systems



<http://www.cirmm.iis.u-tokyo.ac.jp/>

MEMS and True-Nano Technology for Cyber-Physical-System (CPS) Implementation



True Nano Physics

Novel devices beyond the scale of conventional principles

Nano Fabrication

In-house Fab-Lab for cutting-edge manufacturing

Cyber Physical

MEMS sensors connecting between cloud and real world

We focus on exploring new methods of detection, imaging, selection and filtering of molecules and atoms, harvesting of energy from the nanometric level, control of friction, fabrication, diagnosis and even treatment. In parallel, we envisage large scale implementation of things small, such as sensors, energy harvesters, optical and diagnostic nano tools. As the name of the centre implies, we put emphasis on exploring new Methods, as opposed to improving existing techniques.

Kawakatsu Lab. Dept. 2 Ce-B02
Coupling to the Nano Regime

Image of silicon acquired with the Colour AFM

Takahashi Lab. Dept. 3 Ee-305
Nano-probing Technologies

Images of topography and photovoltage on Cu(In,Ga)Se₂ solar cell

Toshiyoshi Lab. Dept. 3 Ee-308
MEMS/NEMS

MEMS environmental vibrational energy harvester

Nomura Lab. Dept. 3 Fe-207
Nanoscale Heat Transfer and Thermoelectrics

Nanoscale Heat Transfer and Thermoelectrics

Si phononic crystal

Al pad

500 nm

3 µm

Nanostructured Si thermoelectric energy harvester

Mizoguchi Lab. Dept. 4 Fe-312
Understanding Role of Atom and Electron in Material

Atomic resolution image of multiple-twin boundary in photovoltaic cell material

Kim Lab. Dept. 2 De-B02/Dw-304
Micro Components & Systems

Porous Microneedles for sensing

Tixier-Mita Lab. Dept. 3 Ee-308
Bio CMOS/MEMS Platforms

Electrophysiology of cardiomyocyte cells culture on a thin-film-transistor active matrix device

Matsuhisa Lab. Dept. 3 /RCAST Ee-412
Interactive electronic devices

Exceptional skin-conformability of the soft and stretchable display

Tochigi Lab. Dept. 1 Cw-305
Microstructures and Mechanical behavior

Local strain analysis based on atomic-resolution in situ TEM loading experiment

Takamiya Lab. Dept. 3 Ew-206
Integrated Power Management

Millimeter-scale LED based on acoustic levitation for mid-air display