BJ KIM LAB.

[Micro Components & Systems]

Centre for International Research on MicroNano Mechatronics

http://www.kimlab.iis.u-tokyo.ac.jp/

NEMS、Bio-MEMS/Bio-Sensor

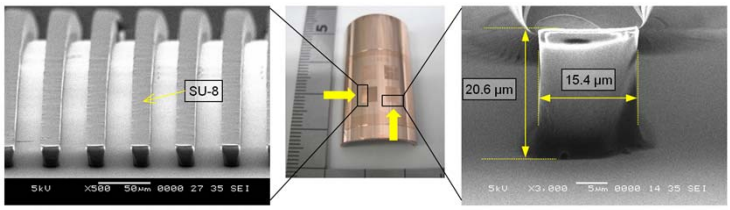
Department of Precision Engineering

Advanced NEMS

Micromachined tools for investigation of nanoworld

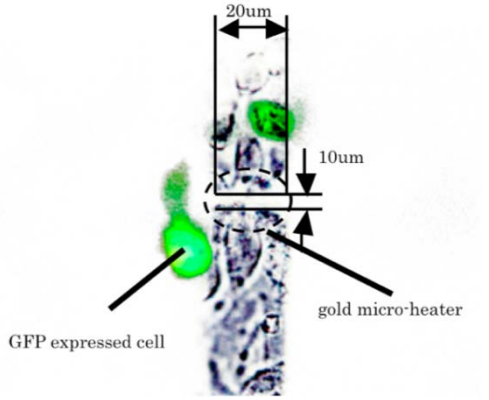
Our research goals are to build nanosystems and fabricate nanoscale devices, in particular for bio-sensing in singular level, through both bottom-up and top-down approaches. Key technologies concentrate on high-resolution surface patterning with simple, low-cost techniques such as micro-contact printing (μCP), probe lithography, flexible polymer based soft lithography, and micro even nano shadow-masks patterning.

Based on these studies on nano/micro components systems for the fabrication of novel nano devices, we investigate to develop various micro sensors for biological applications, such as i) MEMS device for electrical/physical characterization of single cell, ii) single cell electroporation microchip for gene transfection, and iii) temperature measurement on resistively heated nanowires for the study on single molecules, etc.

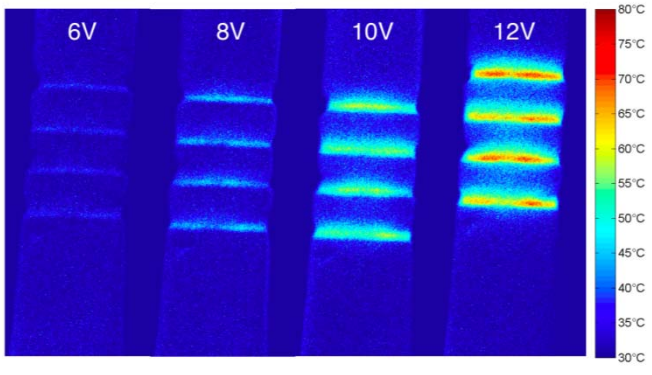


SU-8 Patterns with Line Width: 15 μm / Space: 30 μm

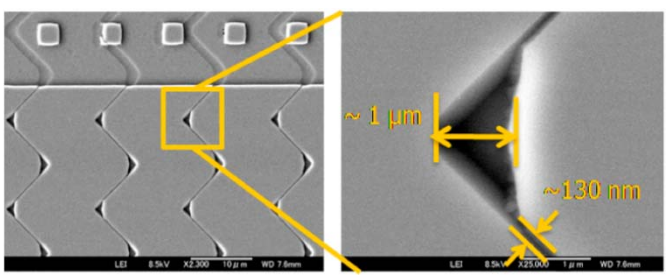
Optical Soft-lithography for 3D surface patterning



Heat-shock-protein synthesis in animal cells induced by micro wire heaters



Nanoscale fluorescent thermometry and nanowire fabrication



Fabrication of various nano channels with micro chambers for single DNA detection