CIRMM/LIMMS/NCRC

TAKAHASHI LAB.

[Nano-probing Technologies]

Centre for Interdisciplinary Research on Micro-Nano Methods

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

Department of Electrical Engineering and Information Systems

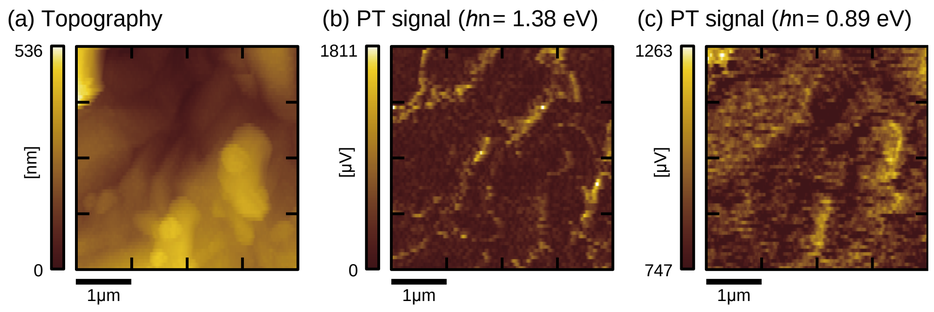
Development of novel nano-probing technologies and nano-scale characterization of nano-materials for future device application

We aim at investigating electronic and optical properties
in various nano-materials by means of nano-probe methods
such as scanning tunneling microscopy (STM), atomic force microscopy (AFM)
and related ones.

♦ Characterization of Solar Cell Materials

· Photovoltaic properties and minority carrier dynamics

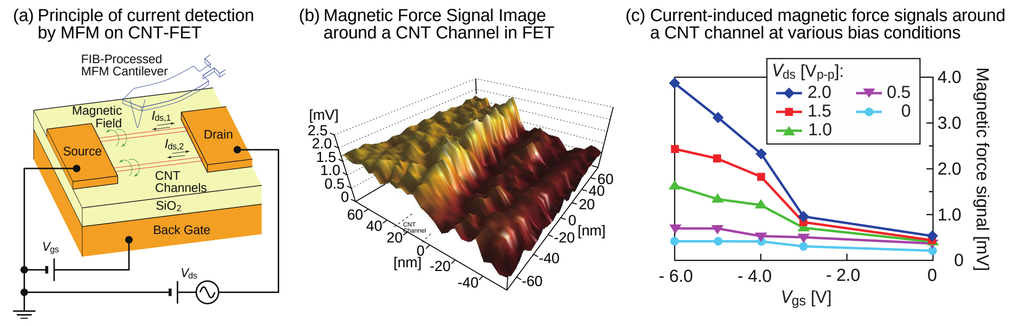
· Photothermal spectroscopy by AFM



Images of topography and photothernal signals on CIGS solar cell

♦ Characterization of Carbon Nanotube FETs

· Current detection by magnetic force microscopy (MFM)

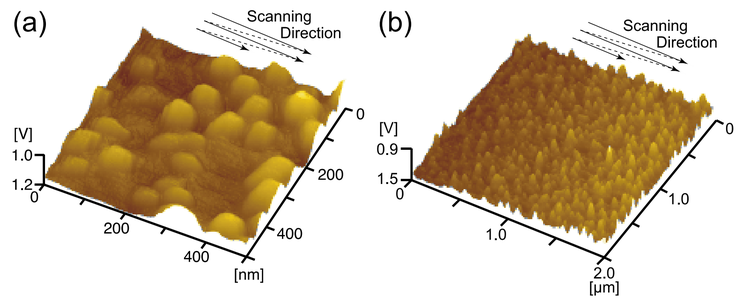


Channel properties in CNT-FET examined by
current-induced magnetic force measurements by MFM

♦ Development of Novel SPM Methods

· Fast imaging in AFM

· Novel operation methods for high performance SPMs



Topographic images of InAs quantum dots observed by fast mode AFM

♦ Physics in Quantum Nanostructure

· Observation of physical phenomena in low-dimensional semiconductors

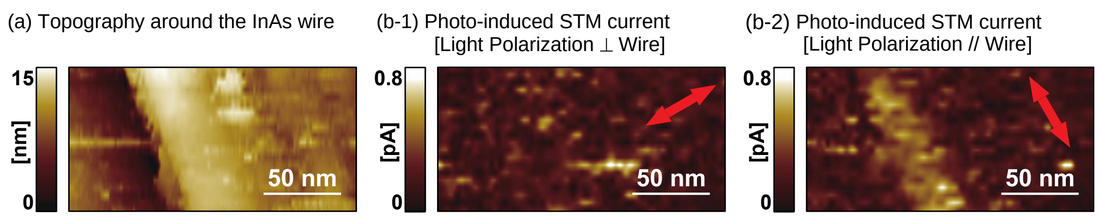
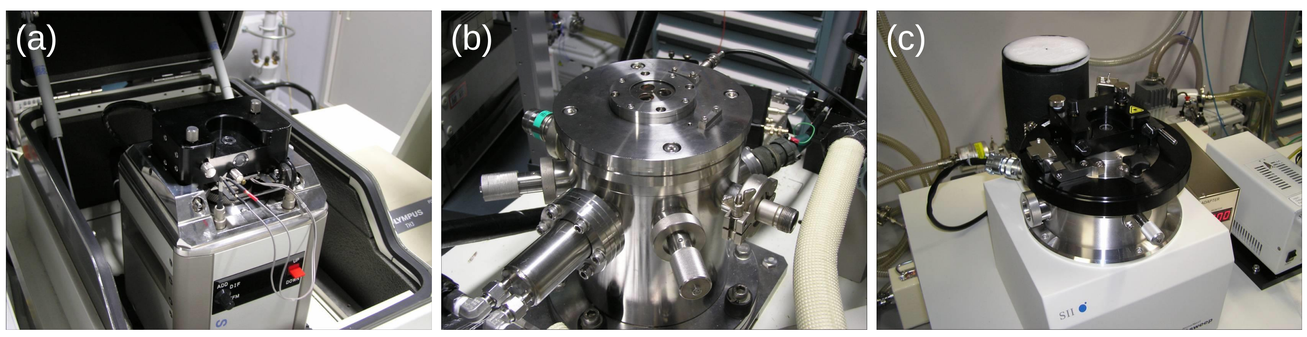
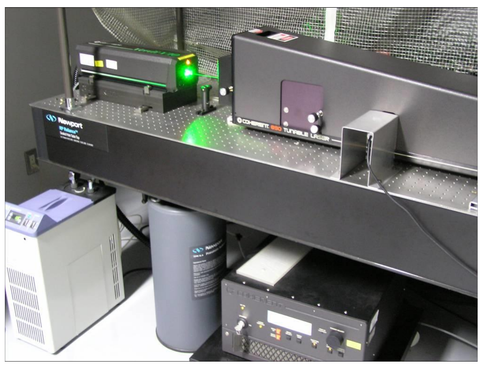


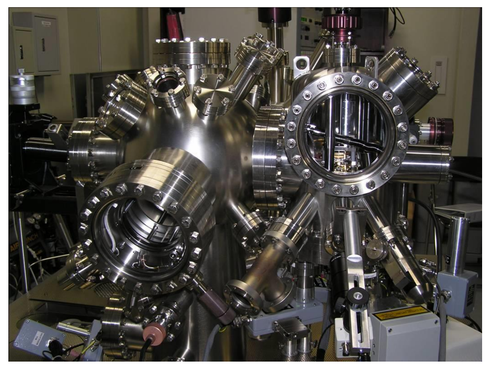
Photo-induced current signals on InAs wire structures
observed by STM under light illumination



Multi-functional SPM equipments:
(a) air type, (b)/(c) high vacuum and variable temperature type



Tunable Ti:Al_2O_3 laser
with solid state green laser



Variable temperature SPM
in ultra-high vacuum