

KAJIHARA LAB.

Manufacturing and measurement using surface and interface



Department of Mechanical and Biofunctional Systems

Manufacturing Science Fundamentals

Department of Precision Engineering, Graduate School of Engineering

http://www.snom.iis.u-tokyo.ac.jp/index_e.html

Terahertz (THz) nanoscopy

We directly probe **spontaneously emitted THz waves (wavelength: 10~20 μm)** with **20 nm-spatial resolution** derived from (bio-)molecular motions and lattice vibrations.
 ⇒ nano-thermometry, energy dissipation on nano-IC, biomolecular motions, etc.

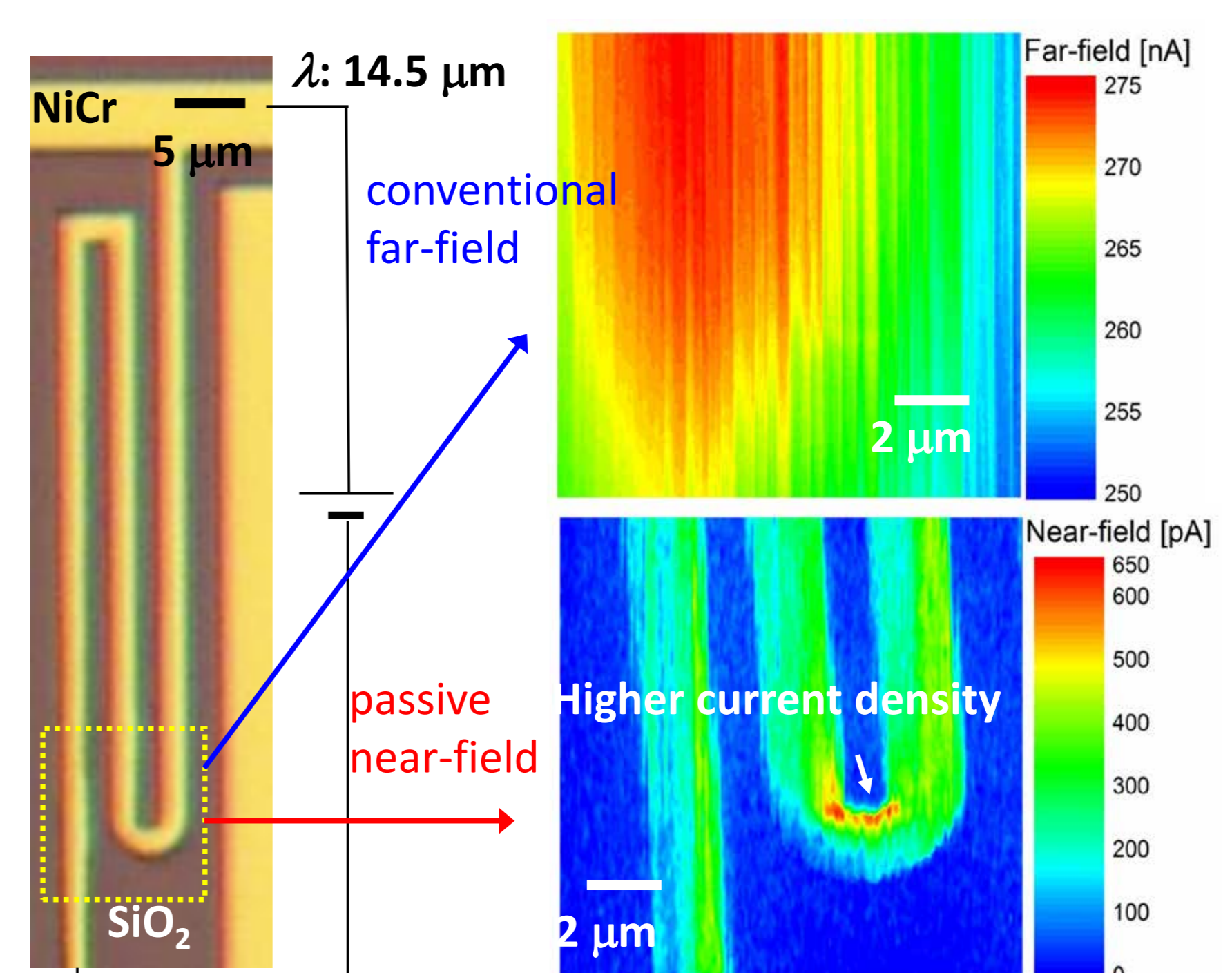
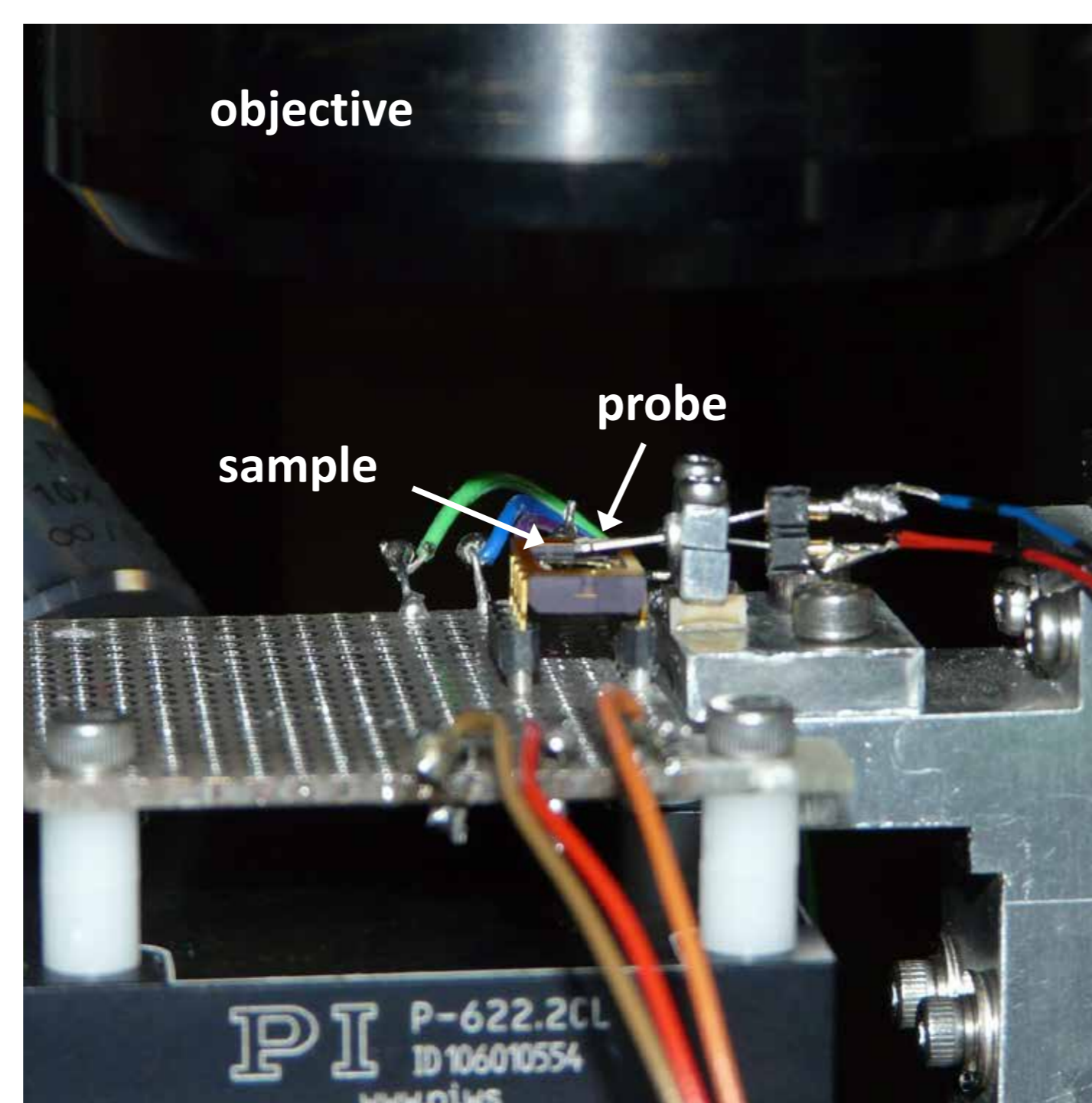
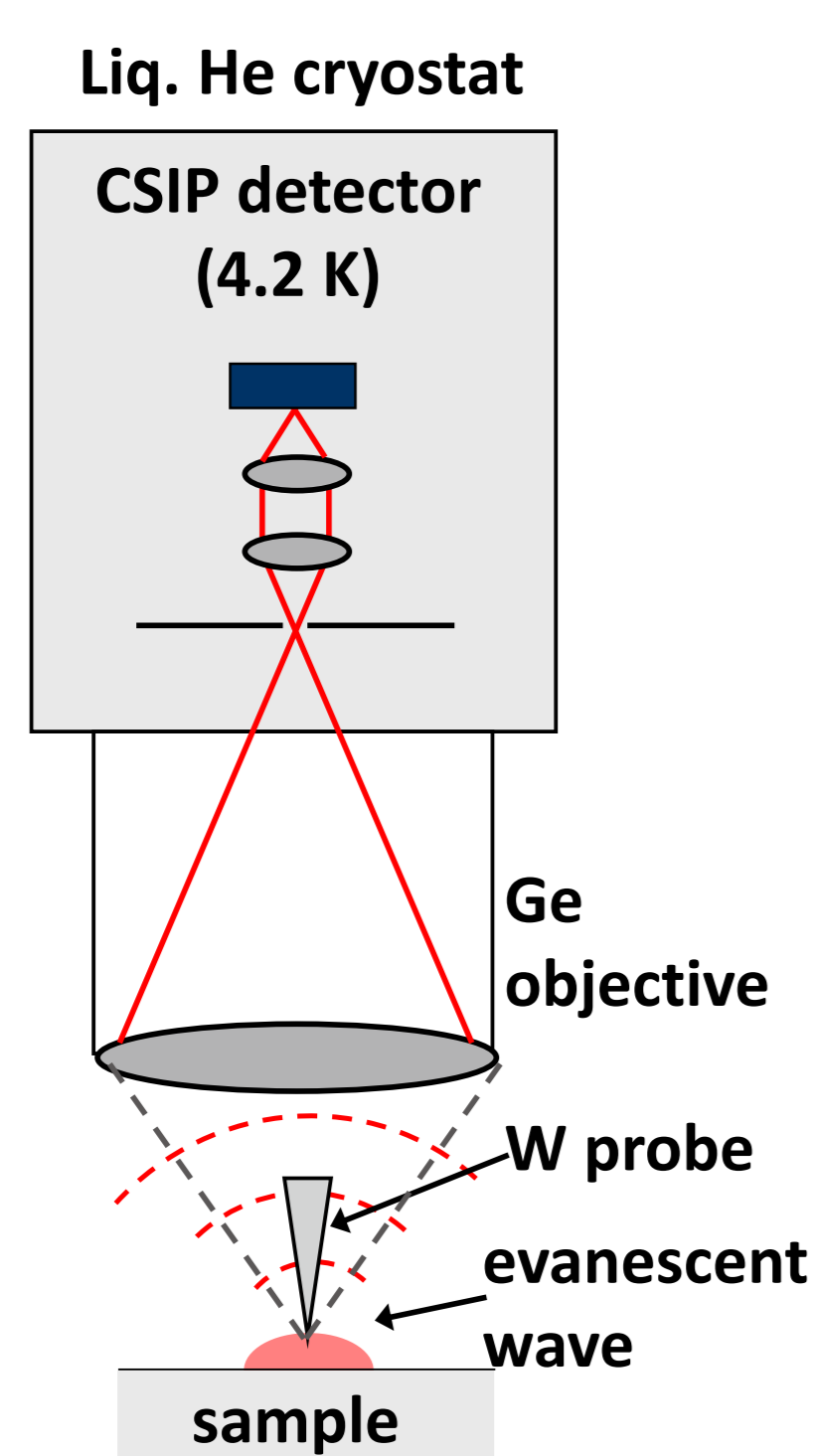


Fig.1 Passive near-field microscopy

Fig. 2 Photo of the microscope

Fig. 3 Nano-thermometry

Metal-polymer direct joining

Small textures treated on metal surface enable direct joining to plastics. We are optimizing the joining conditions and analyzing the joining mechanism.
 ⇒ automobiles, mobile phones, fuel cells, electrodes on ICs, etc.

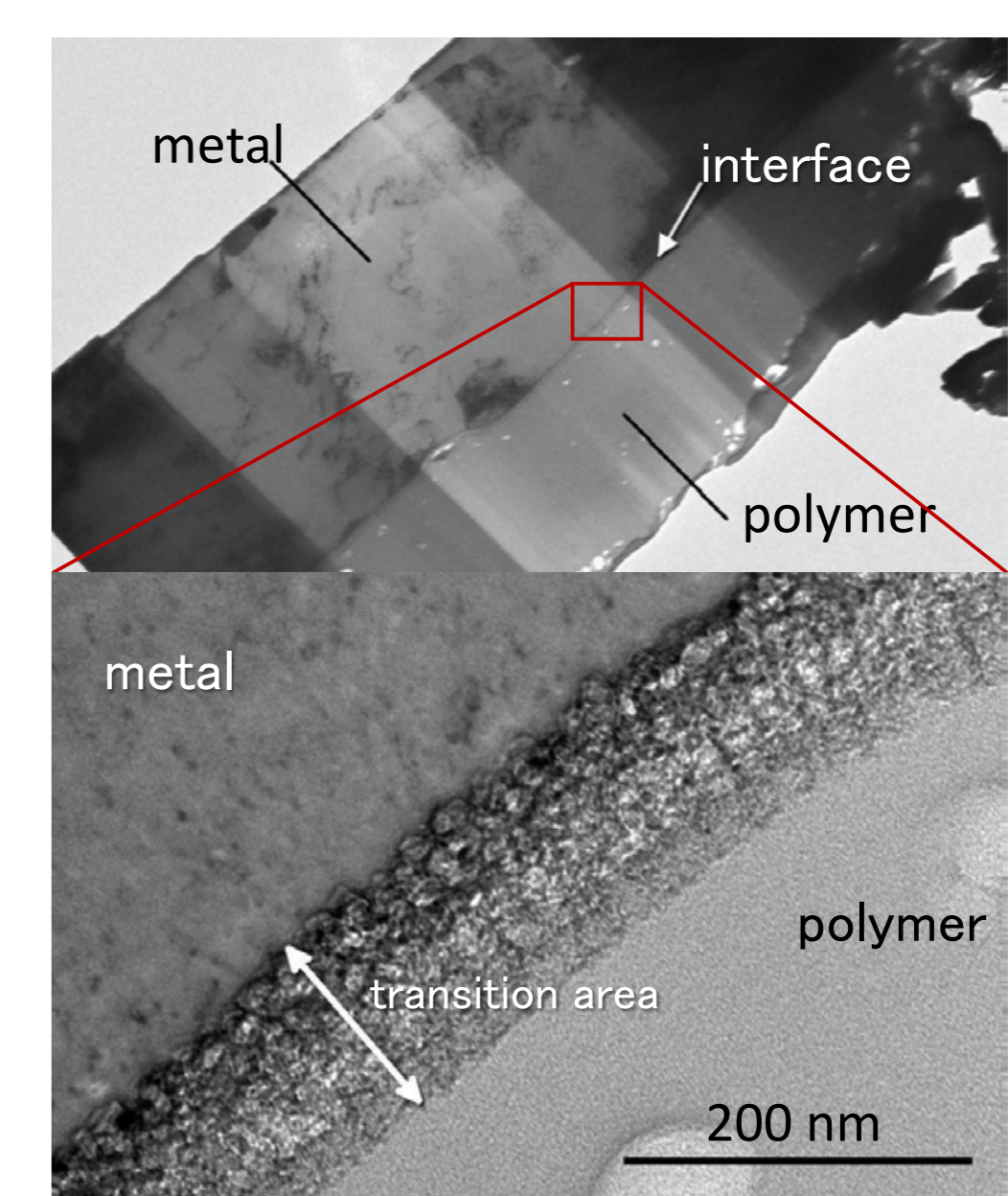
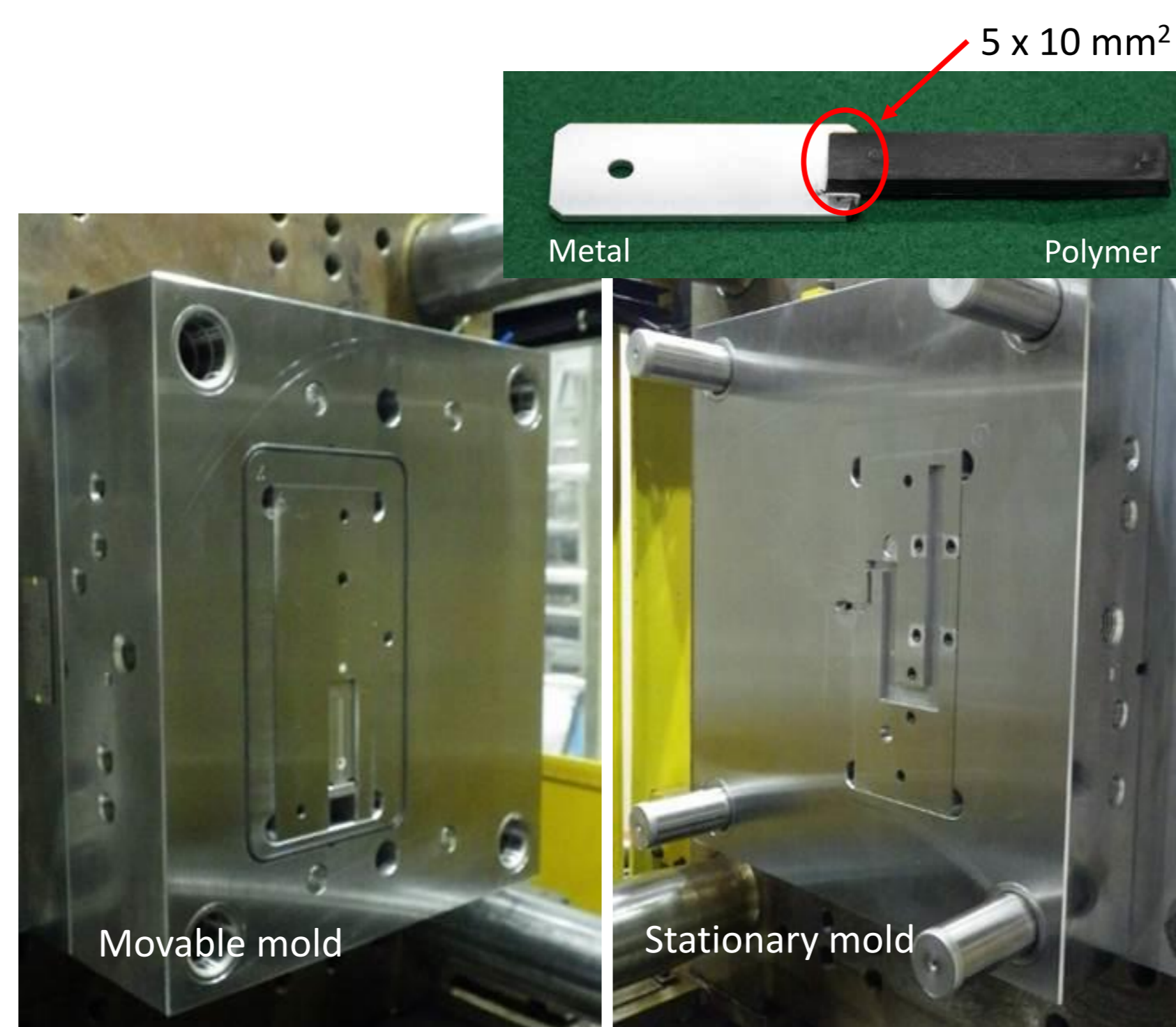
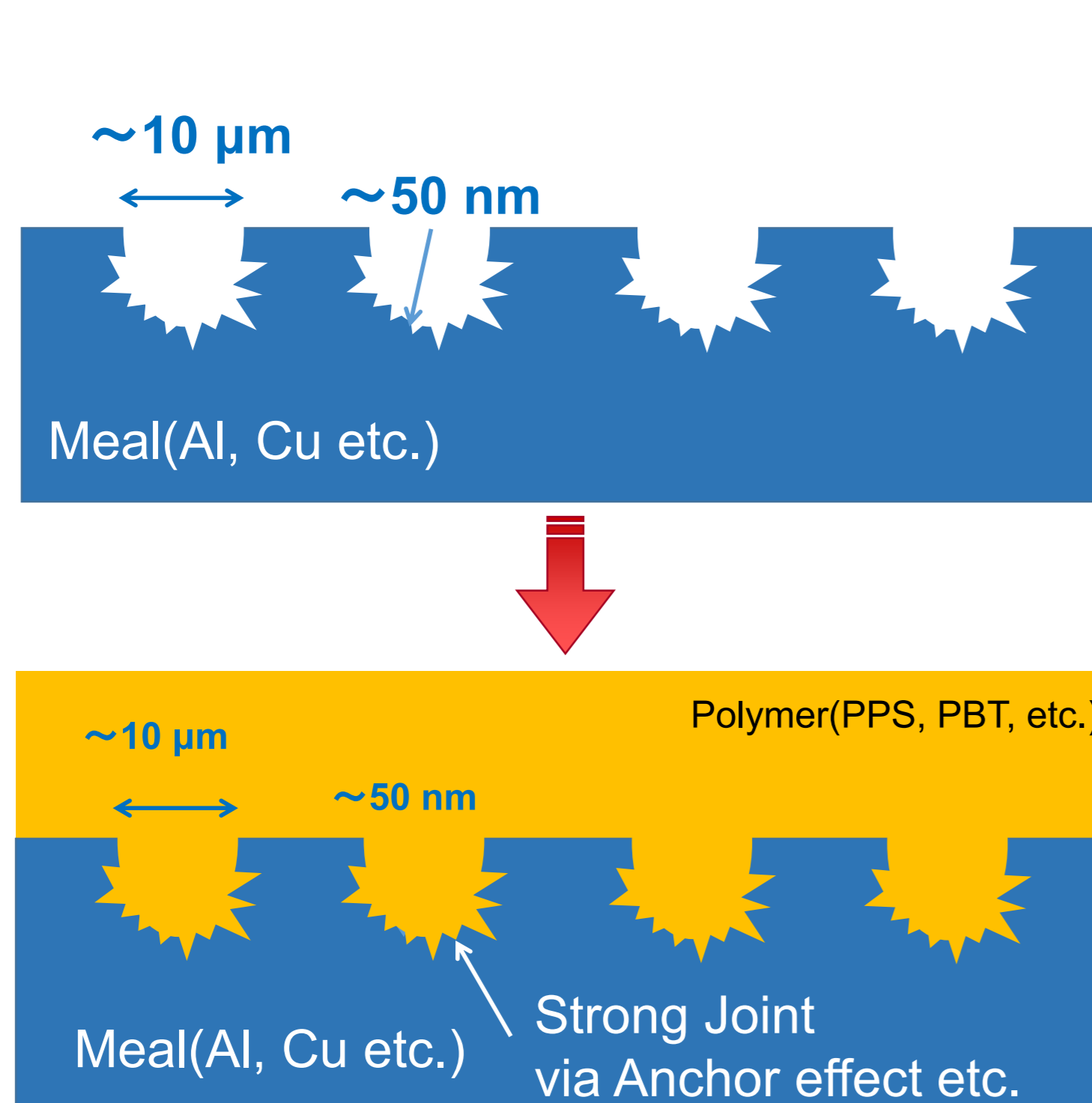


Fig.4 Metal-polymer hybrid joining

Fig. 5 Mold for joining and metal-polymer hybrid

Fig. 6 Analysis via SEM