

KAJIHARA LAB.

[THz Nanoscopy and Metal-Polymer Direct Joining]

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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.
 \Rightarrow nano-thermometry, energy dissipation on nano-IC, biomolecular motions, etc.

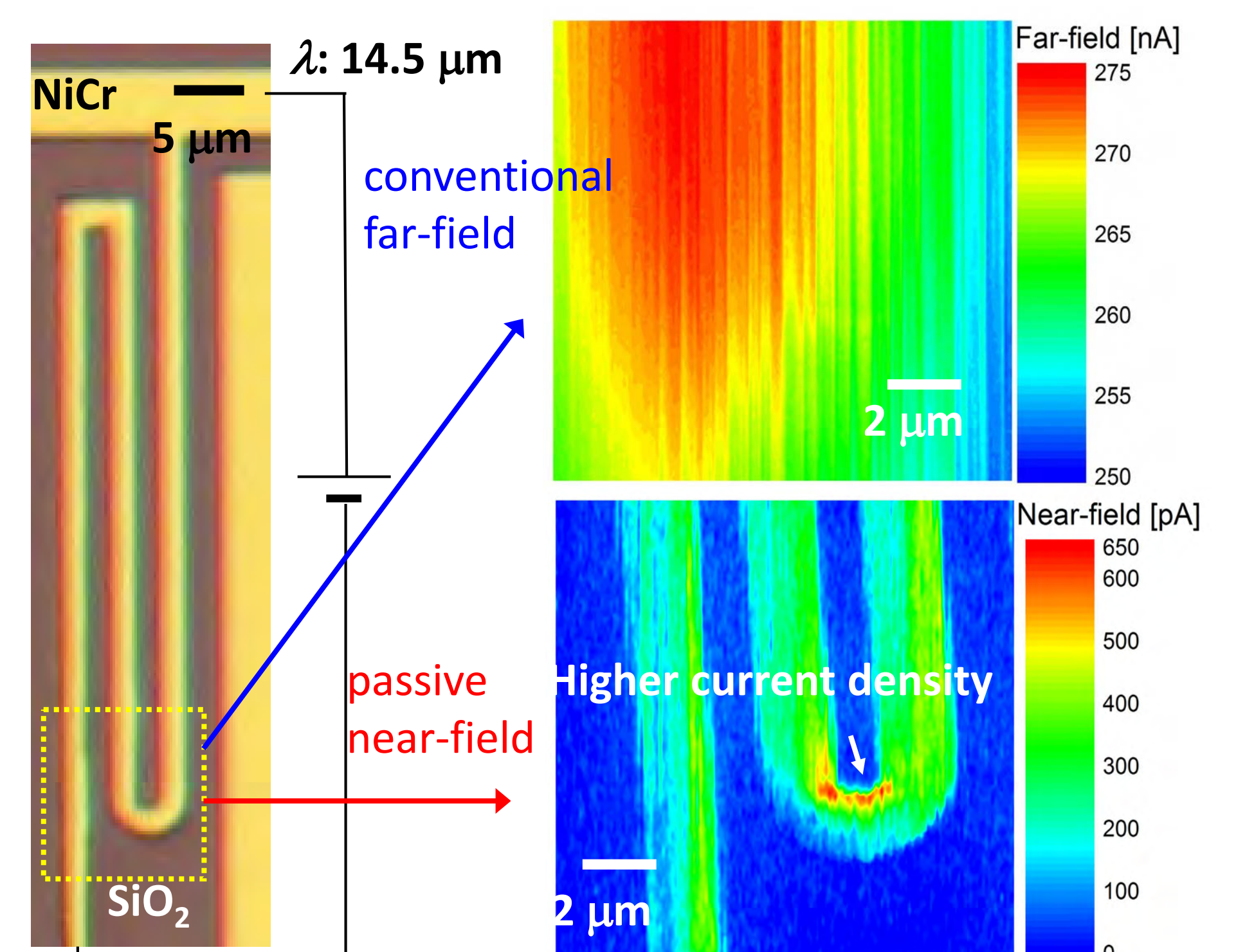
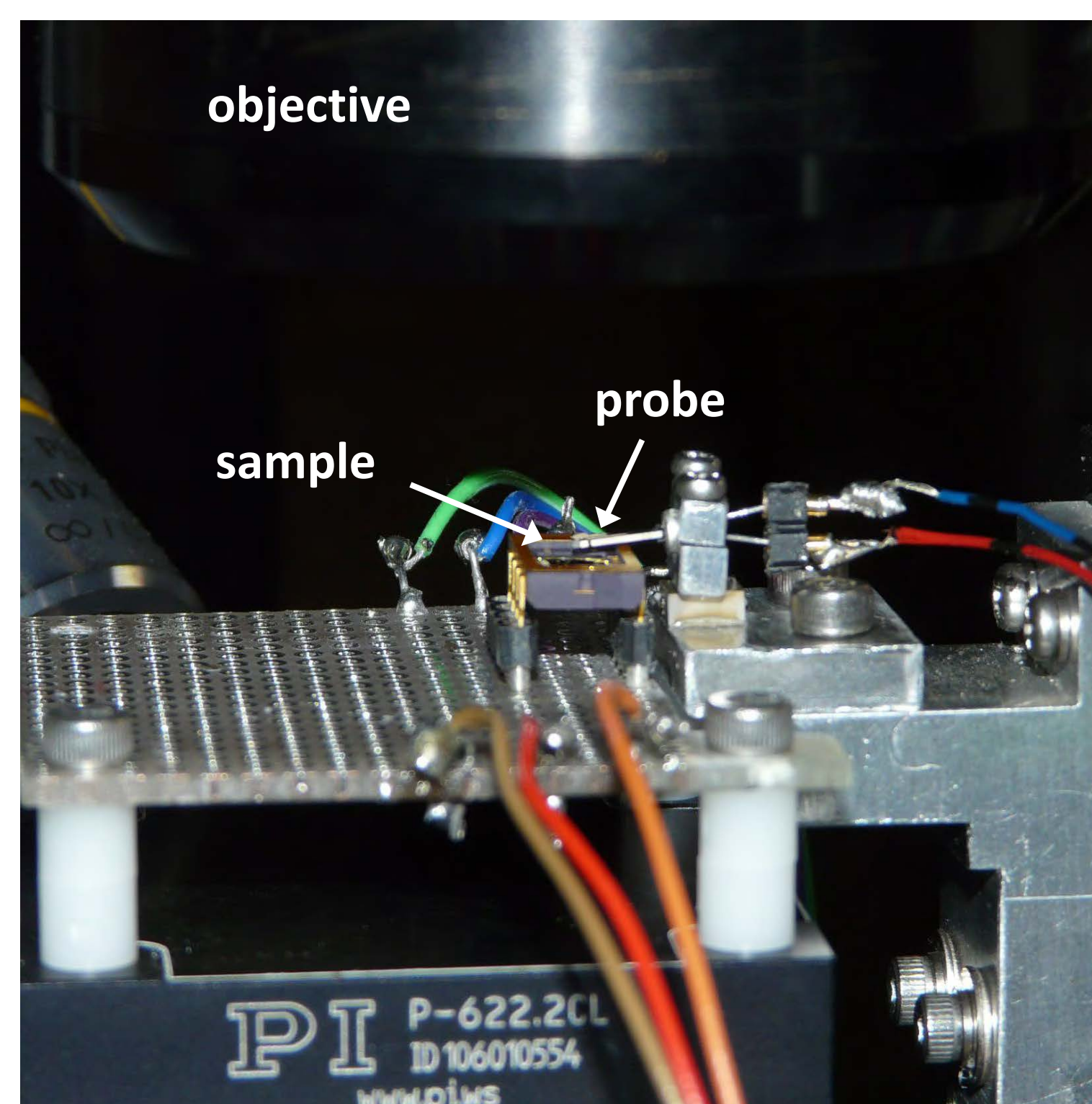
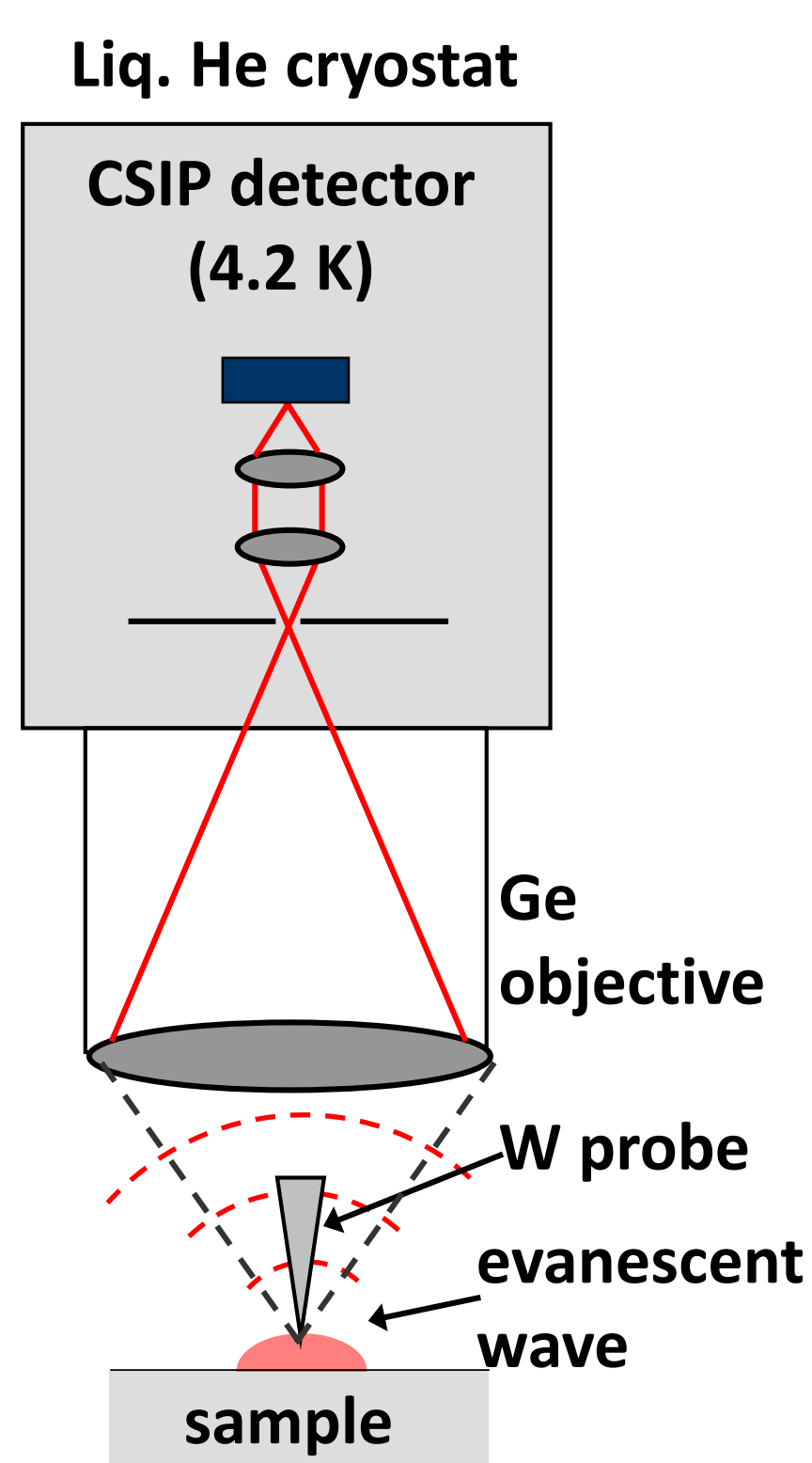


Fig.1 Passive near-field microscopy Fig. 2 Photo of the microscope

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.
 \Rightarrow automobiles, mobile phones, fuel cells, electrodes on ICs, etc.

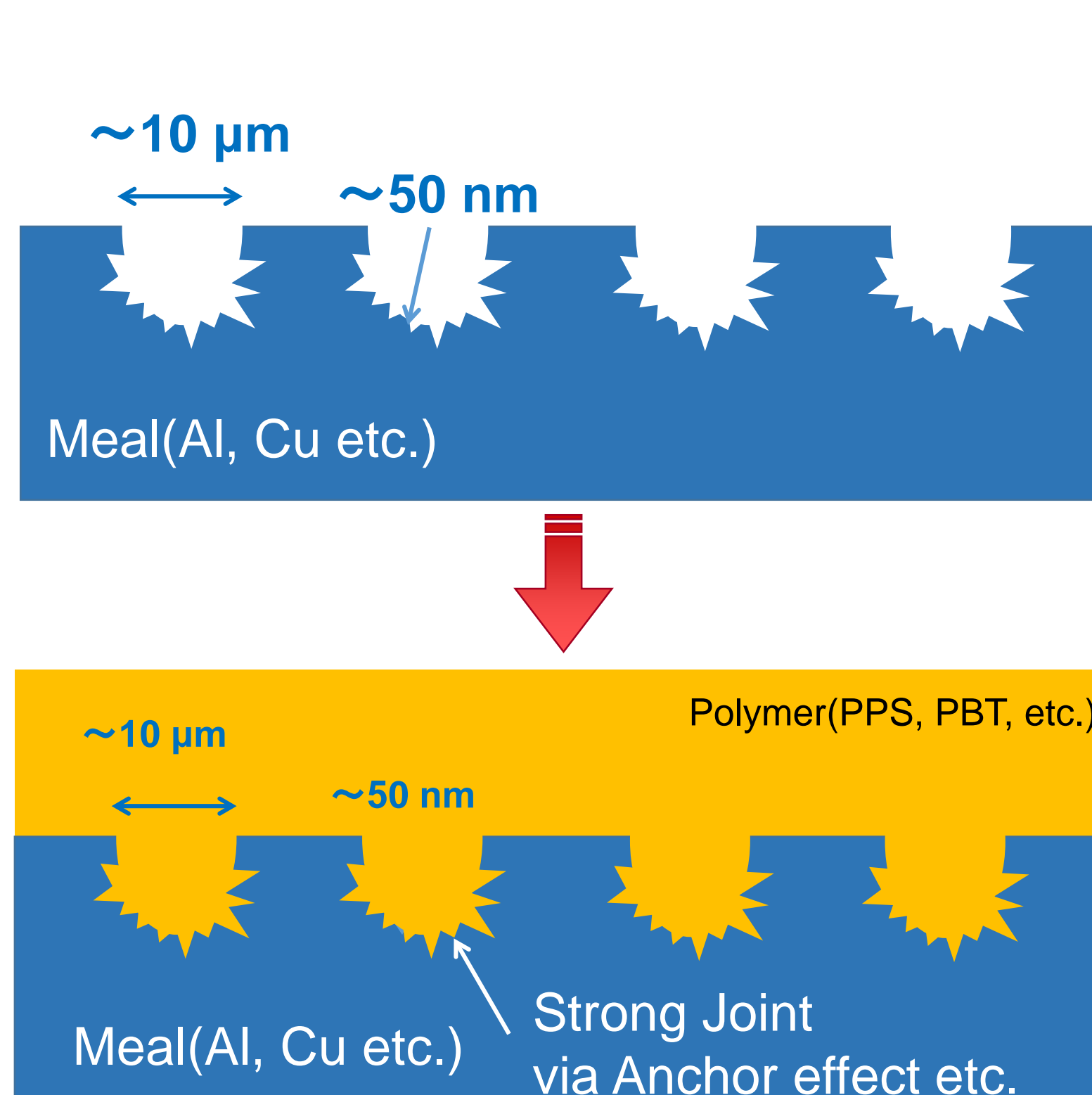


Fig.4 Metal-polymer hybrid joining

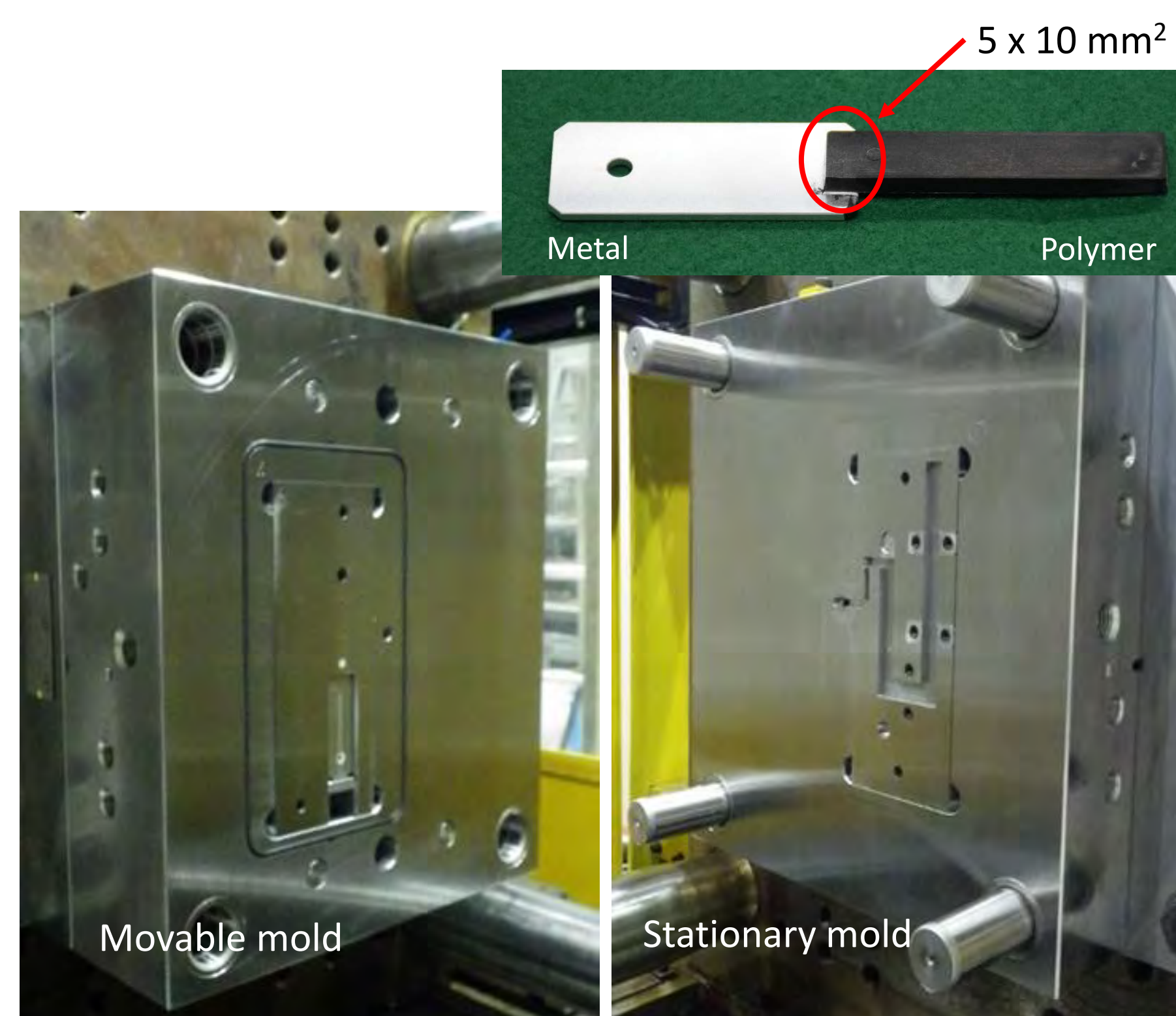


Fig. 5 Mold for joining and metal-polymer hybrid

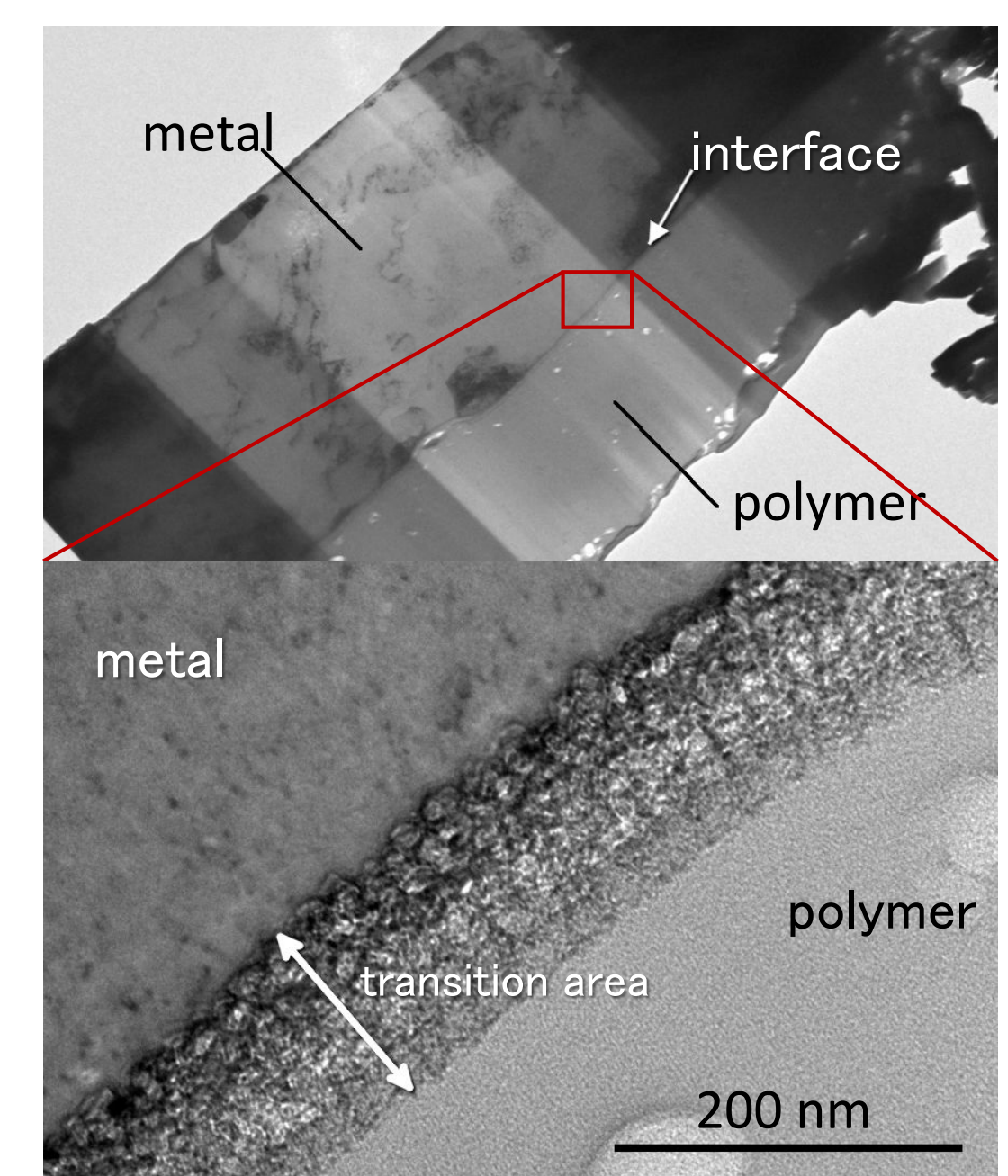


Fig. 6 Analysis via SEM