

KAJIHARA LAB.

[THz Nanoscopy and Metal-Polymer 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.

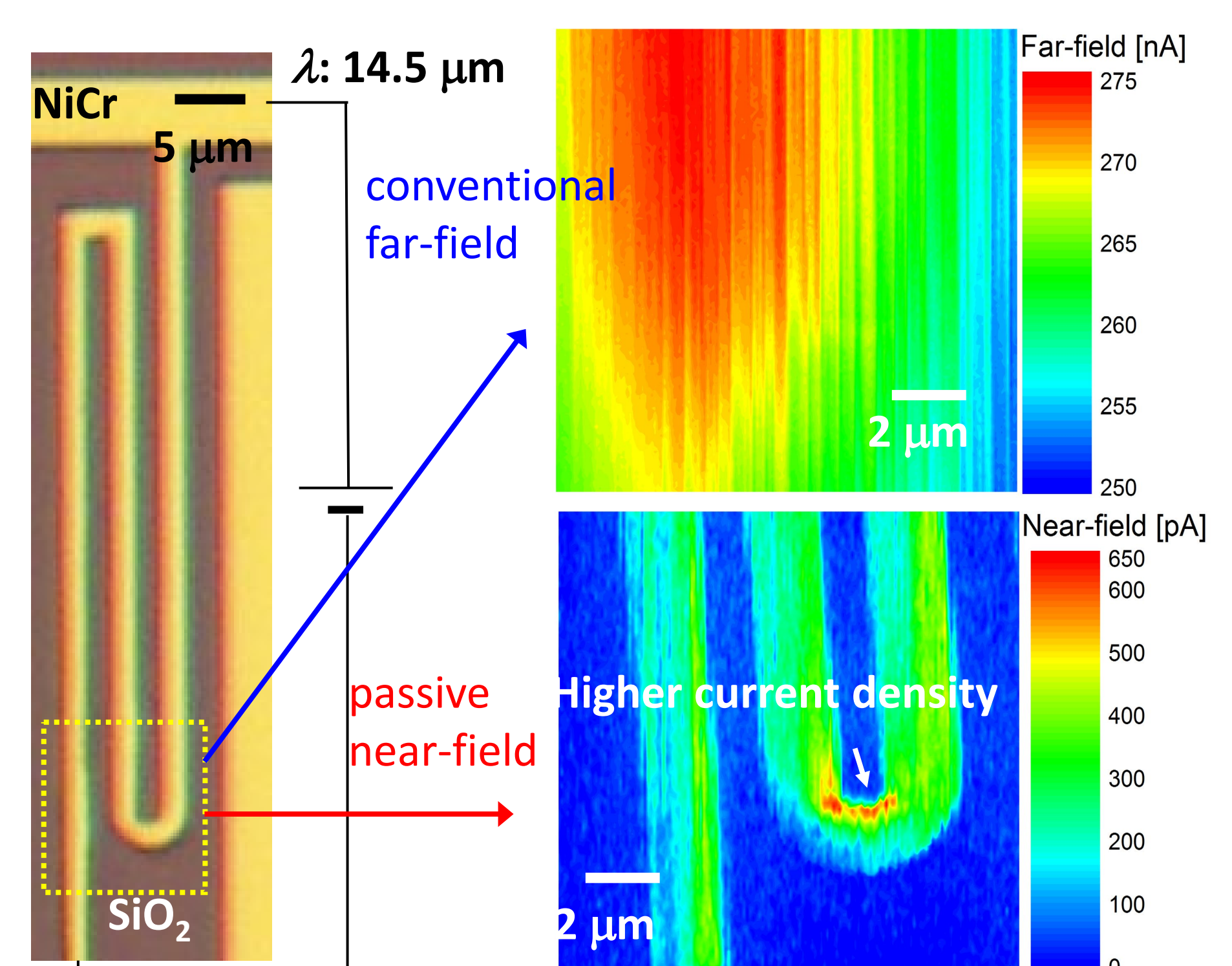
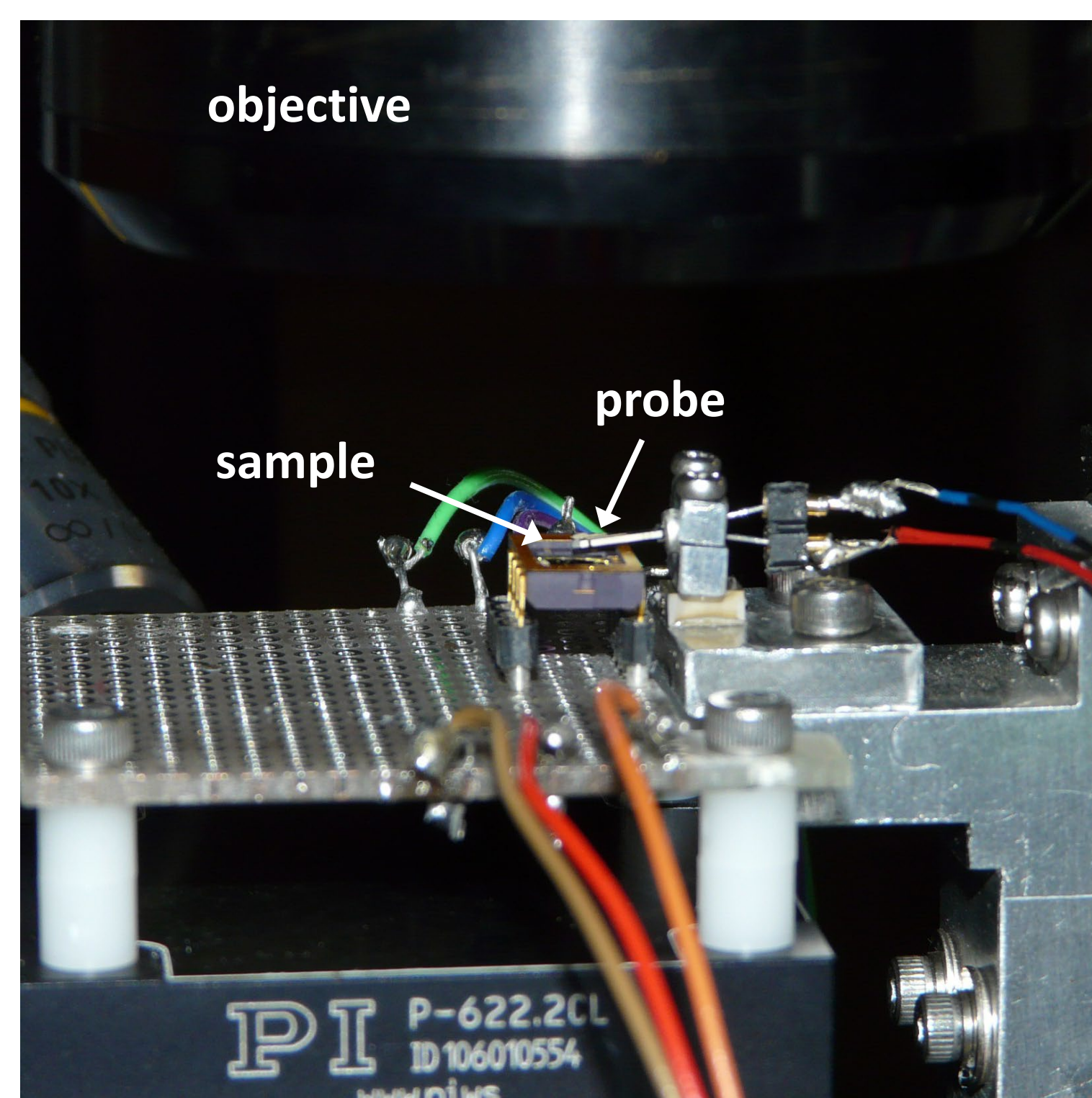
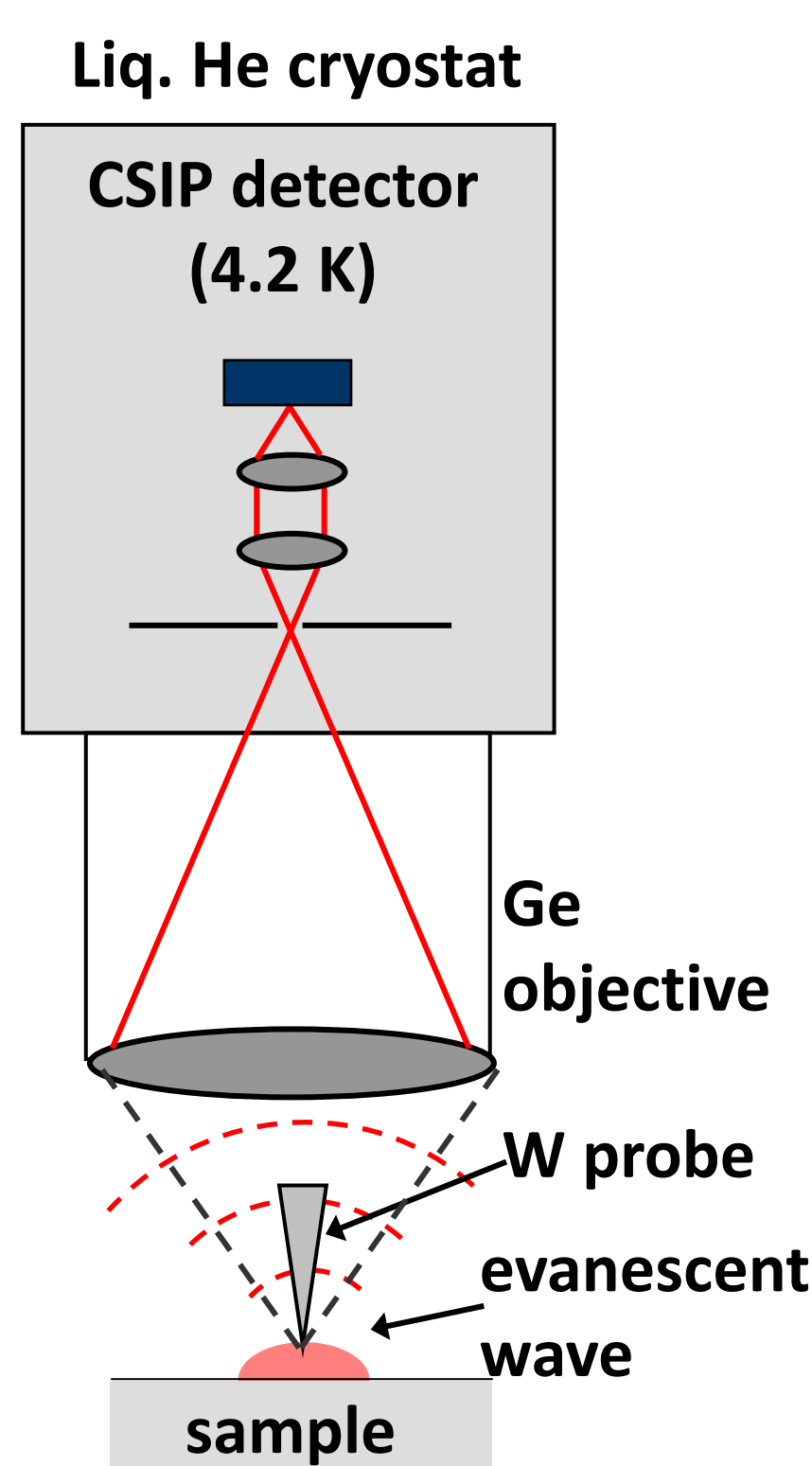


Fig.1 Passive near-field microscopy

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.

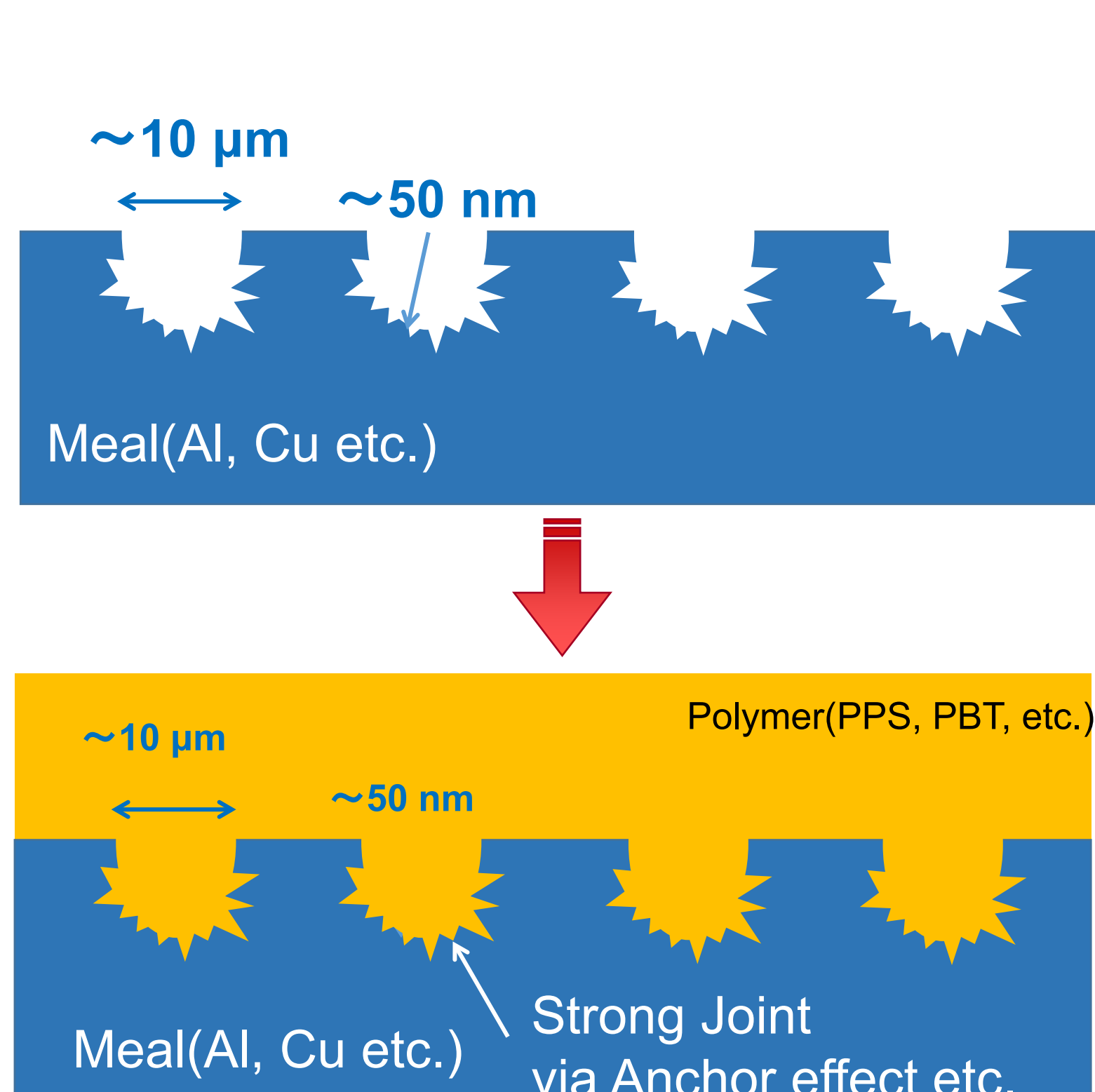


Fig.4 Metal-polymer hybrid joining

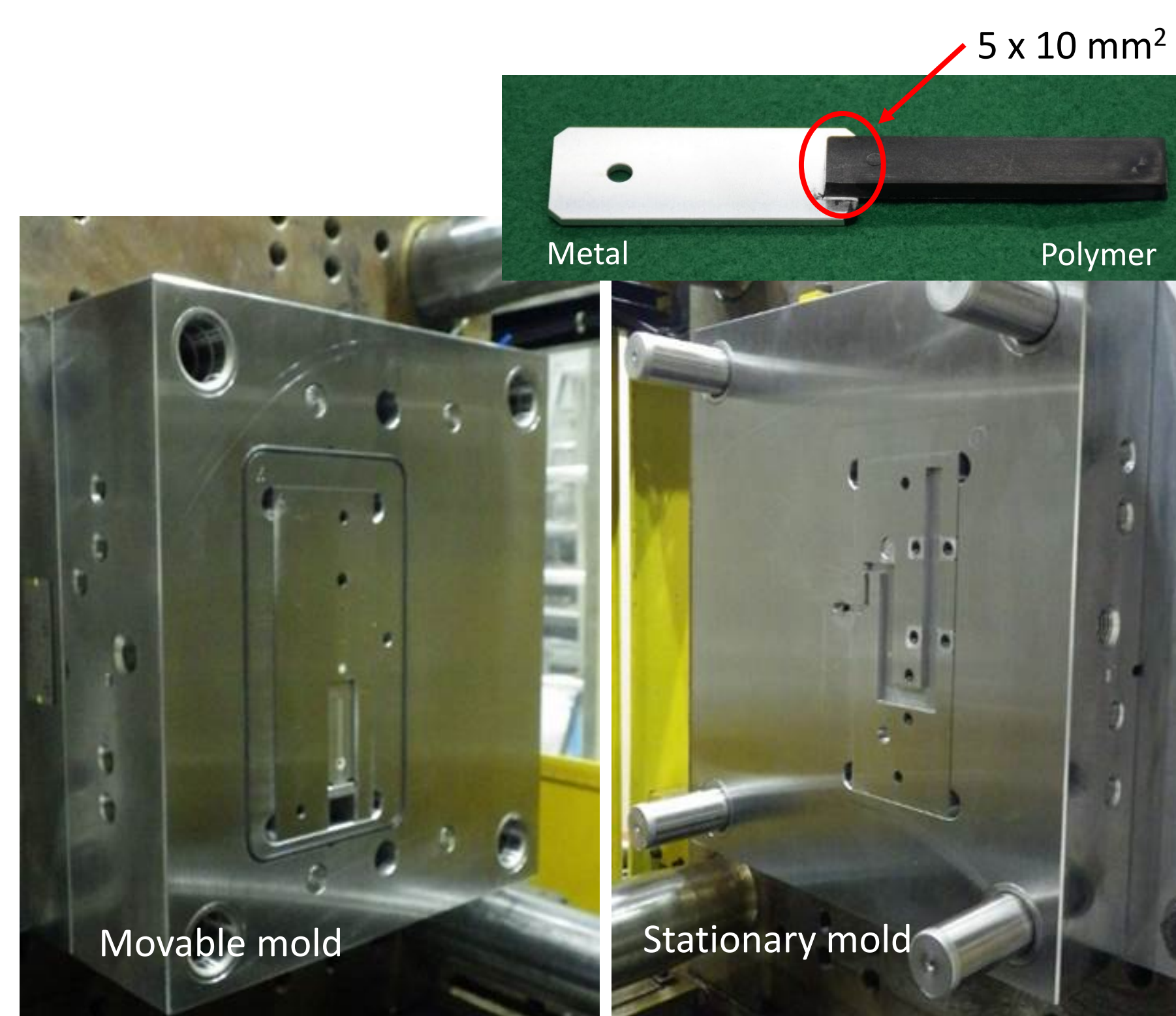


Fig. 5 Mold for joining and metal-polymer hybrid

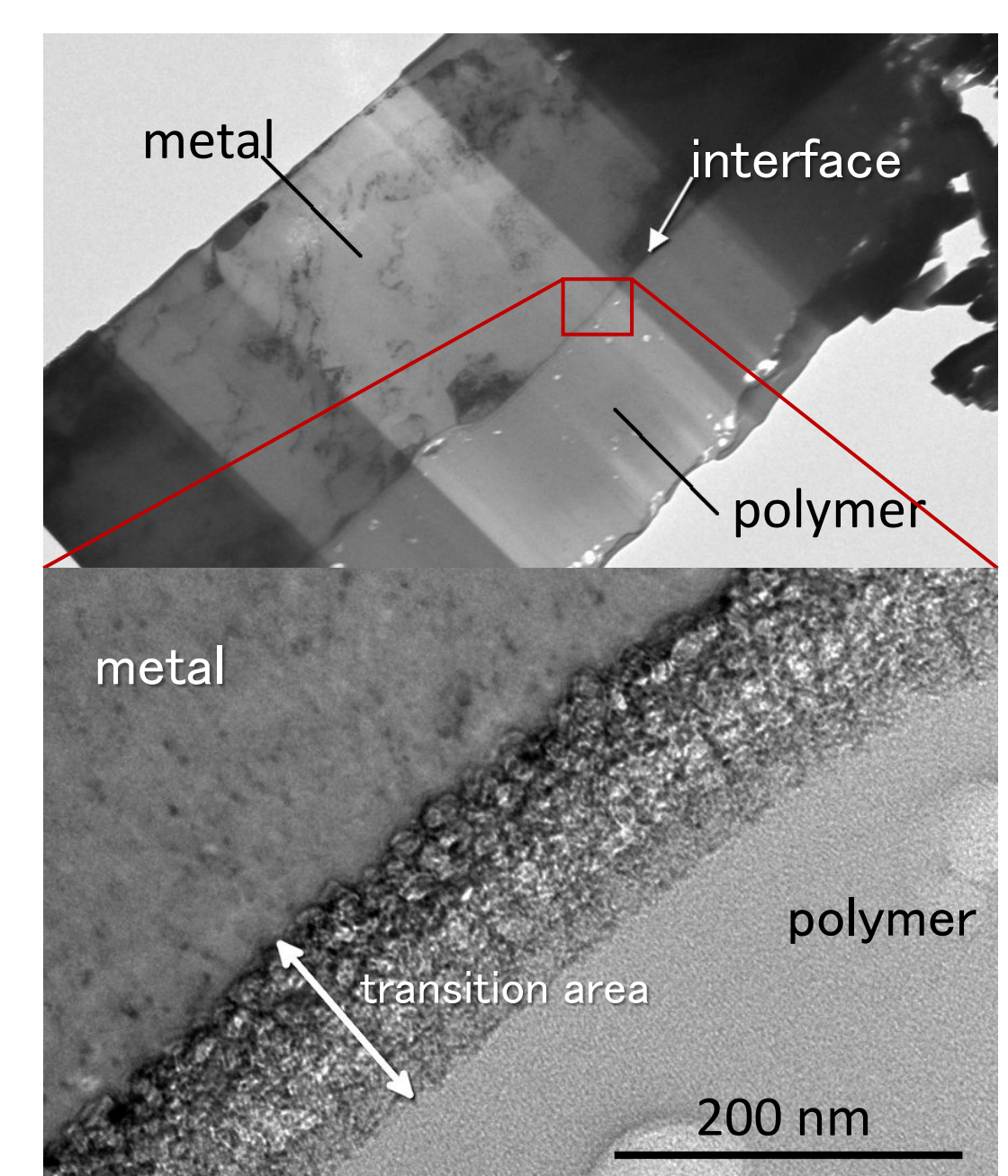


Fig. 6 Analysis via SEM