KAJIHARA LAB.

[Terahertz microscopy and Manufacturing sicence]

Department of Mechanical and Biofunctional Systems

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

Manufacturing Science Fundamentals

Department of precision engineering

Terahertz and Joining Science

Novel THz microscopy and Joining science

Terahertz wave (wavelength: 10 μm ～ 50 μm) contains many important spectra of matters due to molecular/lattice vibration and biomolecular motion. We develop a novel near-field microscope, which “passively (without external illumination)” probes spontaneous THz photons derived from local phenomena with “20 nm” resolution. We are also studying the joining mechanism between metal and polymer, and developing a non-destructive evaluation method of residual stress in polymer products.

◆Passive THz near-field microscopy with 20 nm resolution.
◆THz nano-thermometry.
◆Nondestructive evaluation of residual stress evaluation in polymer products.
◆Metal-polymer joining with surface nano-structure.

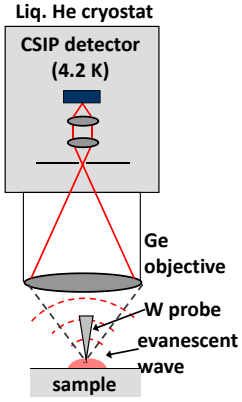

Fig.1 Passive near-field microscopy

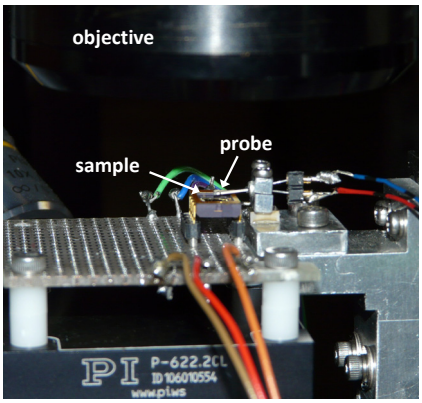

Fig. 2 Photo of the micriscope

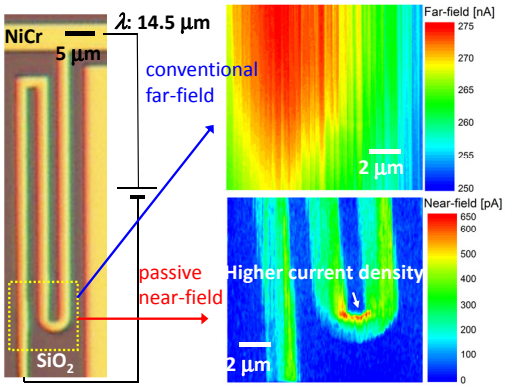

Fig. 3 Nano-thermometry

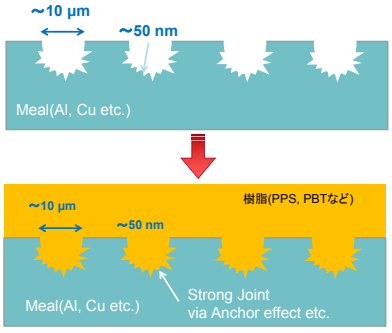

Fig. 4 Concept of metal/polymer joining

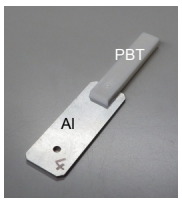

Fig. 5 Joined product

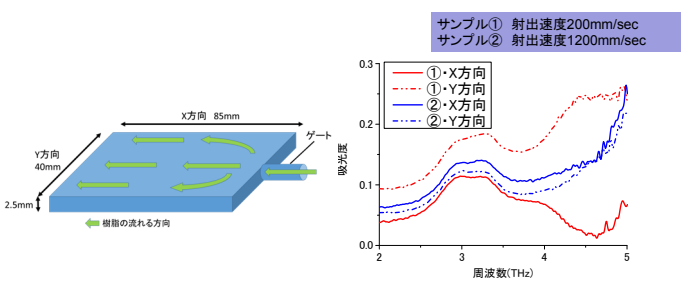

Fig.6 Residual stress evaluation