



Kawano Lab

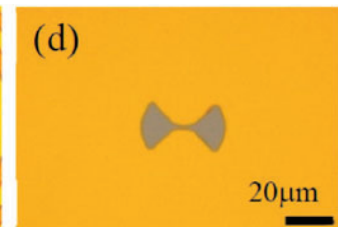
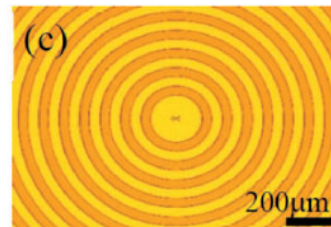
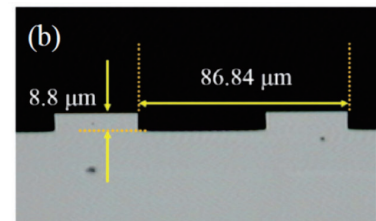
Industrial and medical applications of terahertz devices and systems

Quantum Nanoelectronics Research Center, Laboratory for Future Interdisciplinary Research of Science and Technology

<http://diana.pe.titech.ac.jp/kawano/eng/>

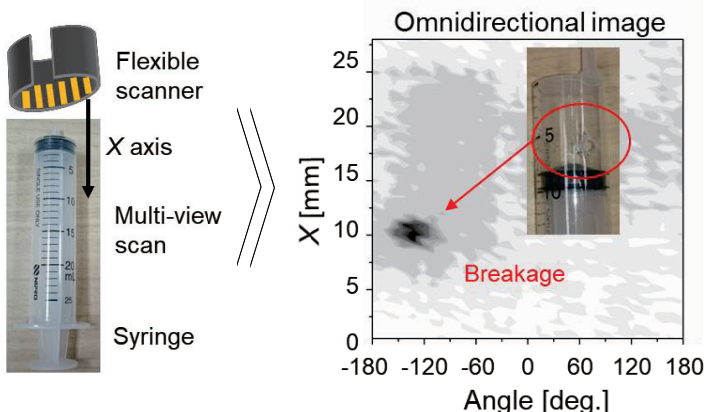
- Flexible and wearable terahertz camera
- Plasmonic structure for sub-wavelength terahertz measurements
- Nondestructive omnidirectional inspection of industrial products
- Minimally invasive medical examination

We are aiming to develop sensing and imaging technologies in the terahertz region and to explore new industrial and medical applications. We are engaged in research on analytical and inspection systems in industrial and medical fields using bendable cameras made of carbon nanomaterials, frequency-tunable plasmonic structures, and near-field spectroscopic imagers.



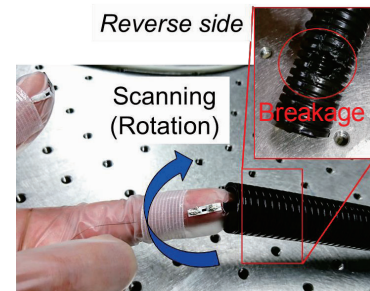
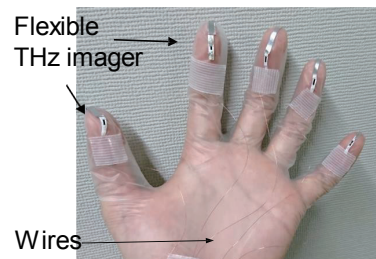
Plasmonic structure for sub-wavelength terahertz measurements

- Concentrating and enhancing terahertz waves in a region smaller than the wavelength
- It is effective for analysis of tiny area, such as biological and medical examinations



Flexible terahertz camera and omnidirectional inspection using carbon nanotubes

- Optimization of film structure of carbon nanotube
- Terahertz images can be taken from all directions wound around the object
- Low cost and easy fabrication of sensor array



Wearable terahertz inspection chip

- Stable and variable carrier density control by chemical doping method
- The detector can be attached to the finger and can be easily inspected at any place regardless of the shape of the object