Terahertz wave devices and imaging application

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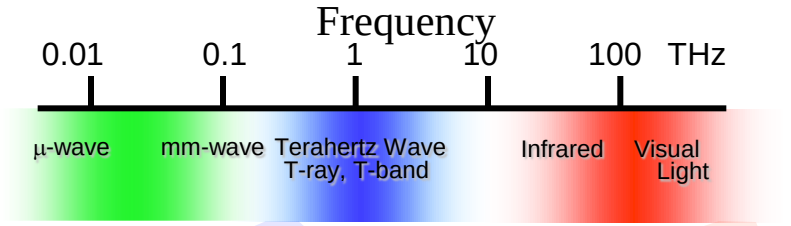
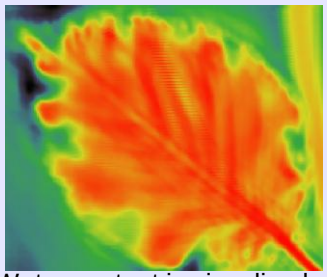


Terahertz Image @0.2THz

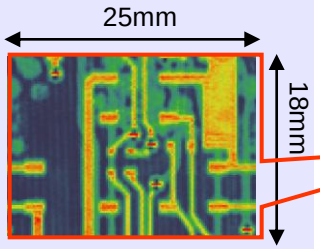
Visual Image

Non-destructive moisture determination & Imaging

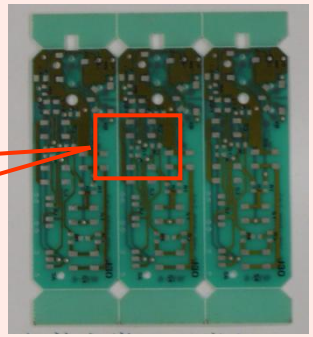


Water content is visualized by the red contrast.

Transmission inspection of multi-layer printed circuit board.



Embedded circuit layer can be visualized.



Content:

Electromagnetic waves in the frequency ranging from 0.1 to 10 THz (1 THz = 1,000 GHz =1×10^{12} Hz) referred as **Terahertz Wave** is wide frequency frontier expected to be the back bone of high-speed board communication. Terahertz waves shows both characteristics of the penetration likely to radio wave and the straight traveling likely to optical wave because of the frequency range spread between microwave (radio wave) and infrared (optical wave). Moreover, the discoveries of the finger print spectrum of bio-materials, drags, explosive, etc. in the range attracts attentions on terahertz transmission imaging for variety application fields including medical, security and industrial inspection.

We investigate terahertz sensitive detectors and emitting devices based on superconductor electronics. We also develop a terahertz imaging system and a terahertz spectroscopy for 0.2 to 1 THz. At present, we can obtain terahertz images shown in the left column for the examples.

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