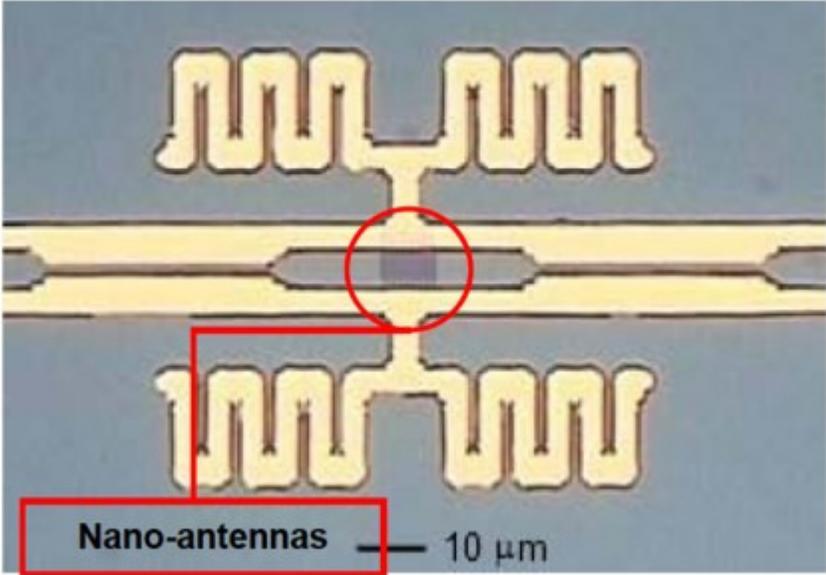
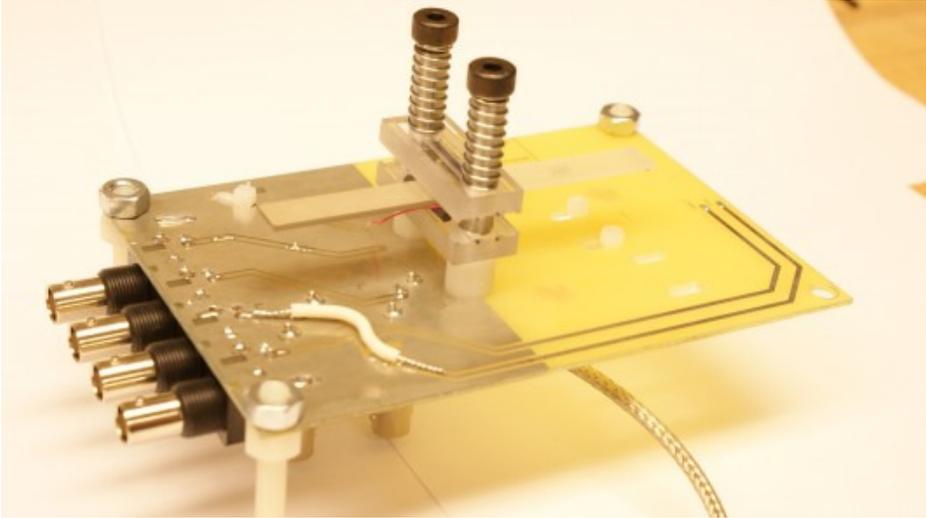


New Technology for high resolution terahertz medical imaging and tricorder-like capabilities that can be embedded in smartphones



Optical microscope picture of an antenna structure with nano-antennas built into its center that produce stronger and more efficient T-rays



The compact radiation source

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A research Organization has developed Terahertz (THz) or T-rays, which could help make handheld devices with tricorder-like capabilities, a way to produce stronger and more efficient T-rays at normal temperature conditions in a much stronger directional beam than was previously thought possible and will allow future T-ray systems to be smaller, more portable, easier to operate, and much cheaper.

The team produced a strong beam of T-rays by shining light of differing wavelengths on a pair of electrodes, which took the form of two pointed strips of metal separated by a 100 nanometer gap placed on top of a semiconductor wafer. This tip-to-tip nano-sized gap electrode structure acts like a nano-antenna to significantly enhance the THz field and amplify the THz wave generated. The arrays of their new nano-antennas can generate a power output that is 100 times higher than the output of commonly used THz sources, which provides T-ray imaging devices with more power and higher resolution. As the wavelength of the T-rays can be tuned, the researchers are able to create a beam that is useable in the scanning technology.

This breakthrough in the generation of T-rays that takes a step closer to these new scanning devices. With the introduction of a gap of only 0.1 micrometers into the electrodes, they have been able to make amplified waves at the key wavelength of 1000 micrometers that can be used in such real world applications."

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