Metamaterial-Inspired Terahertz Devices

Withawat Withayachumnankul

Project description

In the last ten years, terahertz technology has become one of the liveliest research areas across the electromagnetic spectrum. Many electronic and photonic techniques have been developed to generate and detect terahertz waves with high efficiency. The band comes along with opportunities for unique applications in sensing, imaging, and communications. Great research efforts become critical to realise these applications.

Key aims

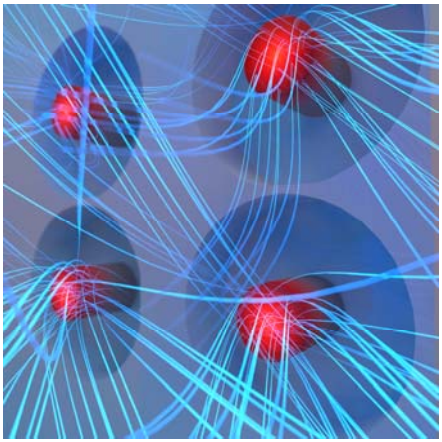
Our research aims to create advanced electromagnetic devices to manipulate terahertz waves. These devices will be inspired by various techniques from the microwave and optics communities. As the availability of low-loss materials are limited, the concept of metamaterials becomes a central scheme towards high-performance terahertz devices. Ultimately, we envisage our realisations in high-speed sensing and short-range sub-Tb communications.

Our selected publications

"Terahertz reflectarrays and nonuniform metasurfaces," *IEEE Journal of Selected Topics in Quantum Electronics*, 23(4), 8500918, 2017. (Invited for special issue on Terahertz Photonics; front cover)

"Low-profile terahertz radar based on broadband leaky-wave beam steering," *IEEE Transactions on Terahertz Science and Technology*, 7(1), 60–69, 2017. (Most popular article in Jan-Feb '17; Highlighted in *IEEE Microwave Newsletter*, Feb '17)

"Dielectric resonator reflectarray as high-efficiency non-uniform terahertz metasurface," *ACS Photonics*, 3(6), 1019–1026, 2016.



Student attributes

We seek the students who has a background in these related areas to join our team:

- Terahertz technology
- Microwave antennas
- Microwave photonics
- Metamaterials and metasurfaces
- Photonic crystals
- Electromagnetic simulation

For further enquiries

Dr Withawat Withayachumnankul

The University of Adelaide, SA 5005, Australia

+61 8 8313 1812 | withawat@adelaide.edu.au

http://www.adelaide.edu.au/directory/withawat.withayachumnankul