Advances in Resonant Elements and Metasurfaces for Controllable THz Wave Manipulation

Grigorios P. Zouros and Evangelos Almpanis

Terahertz (THz) resonant elements and metasurfaces are man-made structures that interact with THz radiation in a controlled manner. To manipulate the properties of THz waves, resonant elements made of metallic or dielectric materials can exhibit a resonant response at a specific frequency or range of frequencies. Moreover, magnetically active resonant elements have gained popularity due to their improved resonant properties and added functionalities. In general, metasurfaces are made up of subwavelength resonant elements that can change the direction, polarization, amplitude, and phase of THz waves, making them useful for sensing, imaging, communication, and spectroscopy. Ongoing research is aimed at increasing efficiency and functionality through novel designs and fabrication techniques.

This special session will discuss recent developments in terahertz (THz) resonant elements and metasurfaces for controllable manipulation of THz waves. Novel designs and fabrication techniques for resonant elements and metasurfaces are of interest, as is the use of magnetically active materials for enhanced resonant properties and additional functionalities, as well as applications in sensing, imaging, communication, and spectroscopy. The session will provide an opportunity for researchers to present their most recent findings, exchange ideas, and discuss future directions in THz technology.