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Biography

Zhu Weiming received his PhD degree from ESIEE Paris East University, France in 2011. His MSc degree and BSc degree were both from Wuhan University, China in 2006 and 2001 respectively. Dr Zhu Weiming has been working as a senior research fellow at School of Electrical & Electronic Engineering, Nanyang Technological University (NTU) from 2011 to 2015. Currently, he works as a research fellow in SIMTech, A*Star, Singapore. Dr Zhu Weiming's main research interest is focused on structural reconfigurable metamaterials based on MEMS and microfluidic systems. Dr Zhu Weiming has published 12 journal papers and over 20 conference papers in internationally reputable journals including Nature Communications, Advanced Materials, Advanced Functional materials etc. He serves as the reviewer of Applied Physics Letters, Light: Science and Applications and Materials & Desgin.

Presentation Title

Microfluidic Metamaterials – Toward the Tuning Limit

The ability to control resonant properties of individual metamolecule in a metamaterial structure on the sub-wavelength scale will offer an ultimate freedom for dynamically shaping wavefronts of electromagnetic radiation for applications such as variable aberration corrected planar lenses, dynamic holograms and spatial intensity and phase modulators with sub-wavelength pixelation. Here we report tunable metamaterials where the tunabilities are enabled by microfluidic technology. The resonant properties of every individual metamolecule can be continuously controlled at will without limited by the nonlinear properties of the materials. Therefore microfluidic technologies offer ultimate freedom in achieving a dynamic control of metamaterials optical properties as well as electromagnetic wavefront with wavelengths ranging from THz to GHz region. In this paper, we briefly review the pioneer works on MEMS and Microfluidic metamaterials and their applications on tunable lens and absorbers.