

HIGH-CAPACITY LOW-DIMENSIONAL METASURFACES

Cheng-Wei Qiu

Department of Electrical & Computer Engineering, National University of Singapore, Singapore

* Email: eleqc@nus.edu.sg; Tel.: +65-6516-2559

Abstract :

I will report some of the most recent developments in engineering and manipulating light-matter interactions, via the artificially constructed metamaterials of ultrathin thickness compared to the wavelength. In particular, the low-dimension and high-frequency scaling may promise a lot more interesting applications, while the challenges in design principle and fabrication capability will become critical limits. Nano-patterned surfaces to modulate and structure novel light behavior will be studied and the following advanced functionalities will be discussed, e.g., farfield super-resolution imaging, 3D meta-hologram, dynamic OAM generation, plasmonic high-resolution prints, etc. Our work paves a roadmap to design sophisticated and advanced optical devices, with low dimension, miniaturization, randomness, and scaled-up capability.