



About the cover: *Advanced Photonics* Volume 6, Issue 1

Metasurfaces, with their compactness, multifunctionality, and subwavelength coding, revolutionize imaging systems by offering unmatched modulation devices. Their high-dimensional modulation capacity, when intricately modeled, enables the simultaneous optimization of metasurface structure and reconstruction algorithms. This tailoring to specific imaging or perception goals opens doors to previously impossible achievements like extreme depth of field, compact full-Stokes, and snapshot full-space 3D perception. These innovations, emerging from the convergence of nanophotonics, electronics, AI, and information theory, herald new imaging techniques and breakthroughs.

Featured on the cover of *Advanced Photonics* Volume 6 Issue 1 is a schematic of a system utilizing metasurface-based

optical modulation and computation. It modulates high-dimensional optical signals, encoding target information for tailored imaging tasks. Combined with co-optimized computational reconstruction, this approach ensures the high-quality recovery of diverse data types – hyperspectral, full-Stokes polarization, wavefront phase, or depth – depending on the specific imaging challenge.

The image is based on the review paper by Xuemei Hu, Weizhu Xu, Qingbin Fan, Tao Yue, Feng Yan, Yanqing Lu, and Ting Xu, “[Metasurface-based computational imaging: a review](#),” *Adv. Photon.* 6(1), 014002 (2024), doi 10.1117/1.AP.6.1.014002.