

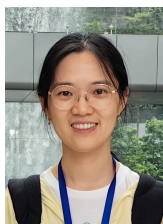
Vectorial Liquid-Crystal Holography

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Vectorial optics with fine inhomogeneous polarization control are highly desired. Metasurfaces have been captivated a promising candidate, but their static post-fabrication geometry largely limits the dynamic tunability. Liquid crystal (LC) is usually employed as an additional index-changing layer together with metasurfaces. Unfortunately, most of the reported LCs only impart a varying but uniform phase on top of that from the metasurface, which we term "scalar" LC optics. Here, we pixelate a single-layer LC to display versatile and tunable vectorial holography, in which the polarization and amplitude could be arbitrarily and independently controlled at varying spatial positions. Furthermore, the subtle and vectorial LC-holography highlights the broadband and electrically-switchable functionalities. Our vectorial LC holography reveals significant opportunities for advanced cryptography, super-resolution imaging, and many other applications.



Short Bio:

Ling-Ling Ma, received her PhD degree in Optical Engineering from Nanjing University, China. She is a tenured Assistant Professor of Nanjing University, and her research interests include liquid crystal superstructures, light-matter interaction, soft matter based linear and nonlinear photonics. She has undertaken several national-level projects, and published over 40 papers in peer-reviewed journals such as Science Advances, eLight, Light Science & Applications, and Advanced Materials, with 6 papers selected as covers. She has applied for/obtained 16 national invention patents. Ling-Ling Ma has also received funding from the Young Elite Scientists Sponsorship Program by CAST, and is the recipient of Young Researcher Award, Innovative and Entrepreneurial Doctor of Jiangsu Province, Xiaomi Young Scholar-Technology Innovation Award, and Dr. Martin Schadt Best Paper Award.