

Abstract Submitted
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Polarization Conversion Using the Cavity Resonances of Plasmonic Patch Nanoantennas FENG WANG, AYAN CHAKRABARTY, Liquid Crystal Institute, Kent State University, FRED MINKOWSKI, Department of Physics, Kent State University, QI-HUO WEI, Liquid Crystal Institute, Kent State University — The control of light polarization is essential to all optical experiments and photonic devices. Here we propose and demonstrate a novel method to realize the polarization conversion by using an array of non-chiral plasmonic patch nano-antennas. The patch nano-antennas are composed of a 2D array of elliptical Ag nano-disks and a base Ag substrate spaced by an ultra-thin dielectric layer. The Ag nano-disks and the base metal substrate would form an array of plasmonic nanocavities with ultrasmall mode volumes. We will show the excitation of the fundamental mode of the plasmonic cavity resonance could introduce a 90° phase delay to the reflected light from the patch antenna. This phase delay can be utilized to realize the polarization conversion between linearly polarized light and elliptically or circularly polarized light.

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