Supporting Information

Computing Metasurface Capable of Broad-Band Switchable Anisotropically Edge-Enhanced Imaging

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Supplementary Note 1: Comparison of the theoretical output results corresponding to different ρ_0

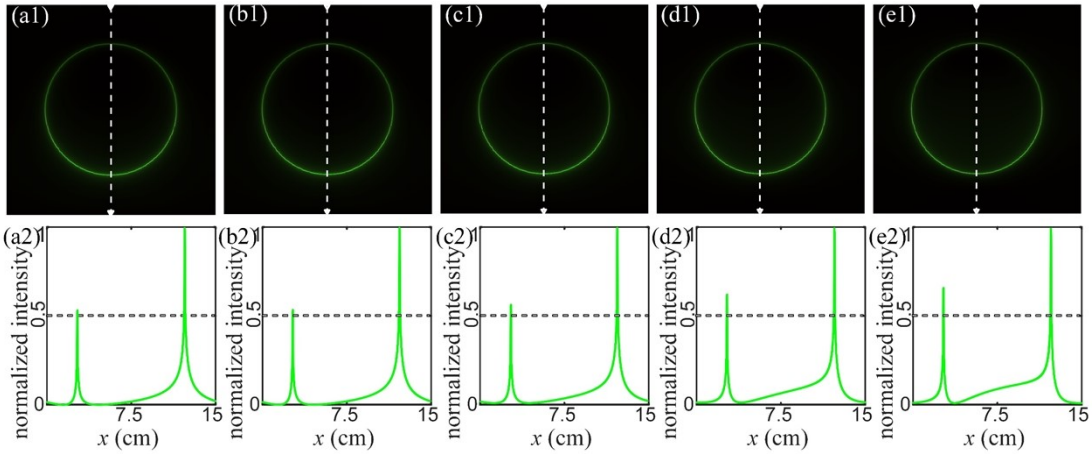

Fig.s1. the theoretical output results corresponding to designed $H(f_x, f_y)$ when a circular pattern is the input object. (a1)~ (e1) are theoretical output results as we set the ρ_0 as $0.001\rho^{1/2}$, $0.01\rho^{1/2}$, $0.15\rho^{1/2}$, $0.5\rho^{1/2}$, $0.8\rho^{1/2}$, respectively. (a2)~ (e2) are the cross-sectional intensity curves of (a1) ~ (e1) along the white dashed lines. The black dashed lines are used as reference lines.

Supplementary Note 2: The designed phase maps of our metasurfaces and corresponding near-field phase distributions.

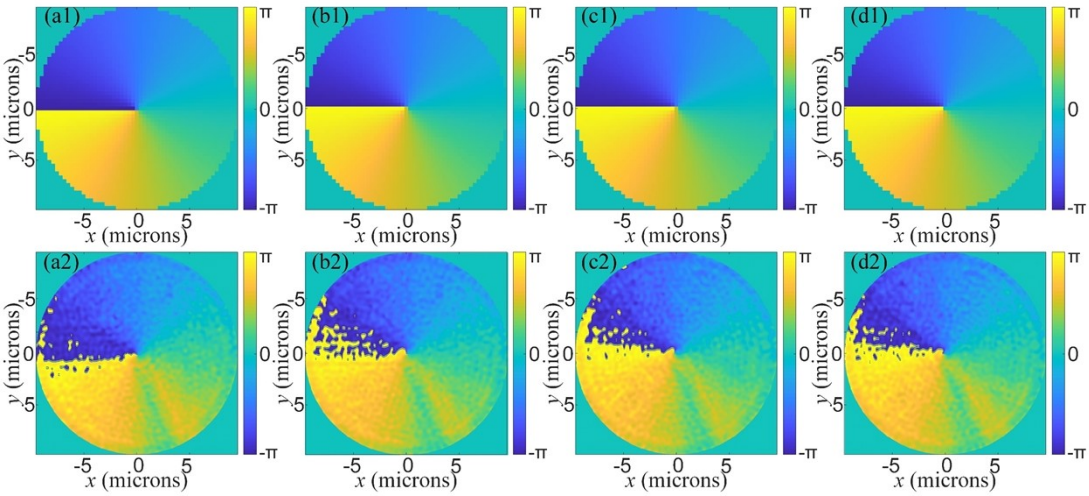

Fig.s2. (a1)~ (d1) are, respectively, the phase maps calculated by equations 3,4,8 and 9. (a2) and (b2) are, respectively, the RCP or LCP near-field phase distributions generated by metasurface 1 under the illumination of an LCP or RCP incident beam. (c2) and (d2) are, respectively, the RCP or LCP near-field phase distributions generated by metasurface 2 under the illumination of an LCP or RCP incident beam.

Supplementary Note 3: The near-field phase patterns of the vortex beam generated by metasurface 1 under the illumination of 480 and 630nm incident beam

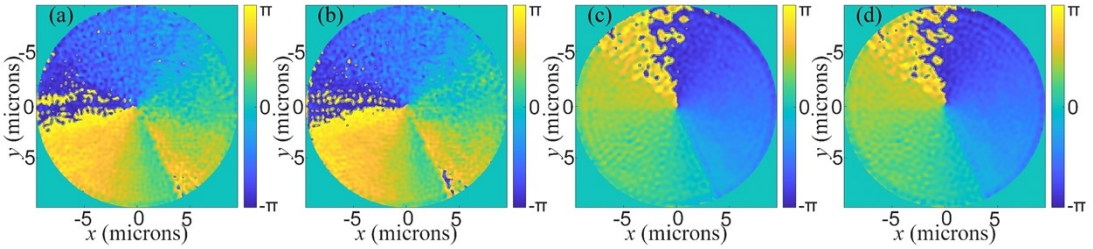

Fig.s3. (a) and (b) are, respectively, the RCP or LCP near-field phase distributions of metasurface 1 under the illumination of an LCP or RCP incident beam (λ=480nm); (c) and (d) are, respectively, the RCP or LCP near-field phase distributions of metasurface 1 under the illumination of an LCP or RCP incident beam (λ=630nm).

Supplementary Note 4: The choice of the nanopillars in our metasurfaces

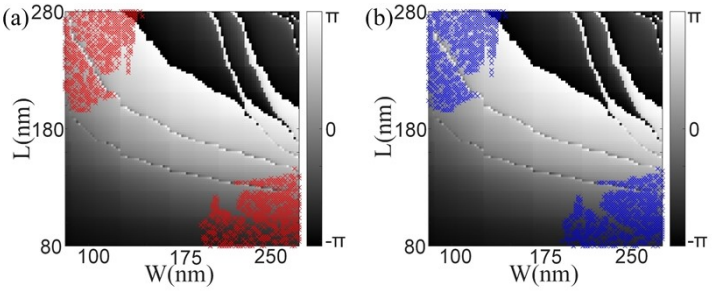

Fig.s4. (a) the phase library δ_x used for metasurface 1, the areas highlighted in red are the selected nanopillars. (b) the phase library δ_x used for metasurface 2, the areas highlighted in blue are the selected nanopillars.