

Supplementary information

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Fabrication Robustness in BIC Metasurfaces

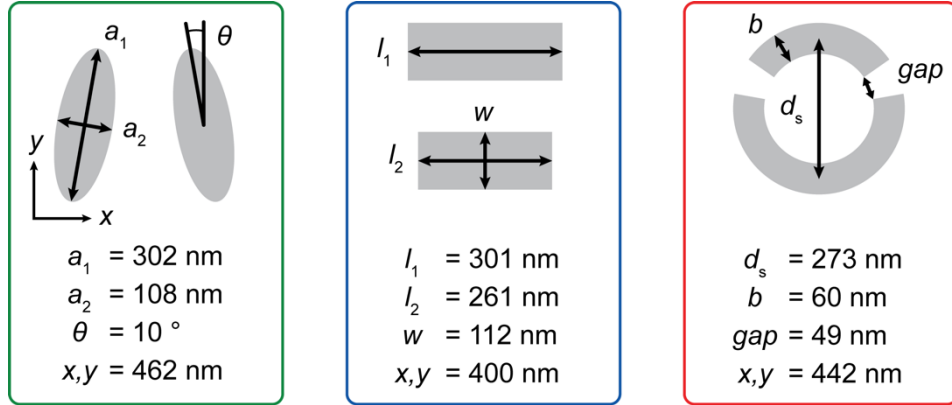


Fig. S1: Unit cell designs with exact dimensions. With a height of 100nm of amorphous Silicon on top of a fused silica substrate, this results in a quasi-BIC resonance at 750nm and about $Q = 200$ with excitation of a plane wave linearly polarized in the x-direction with normal incidence to the metasurface.

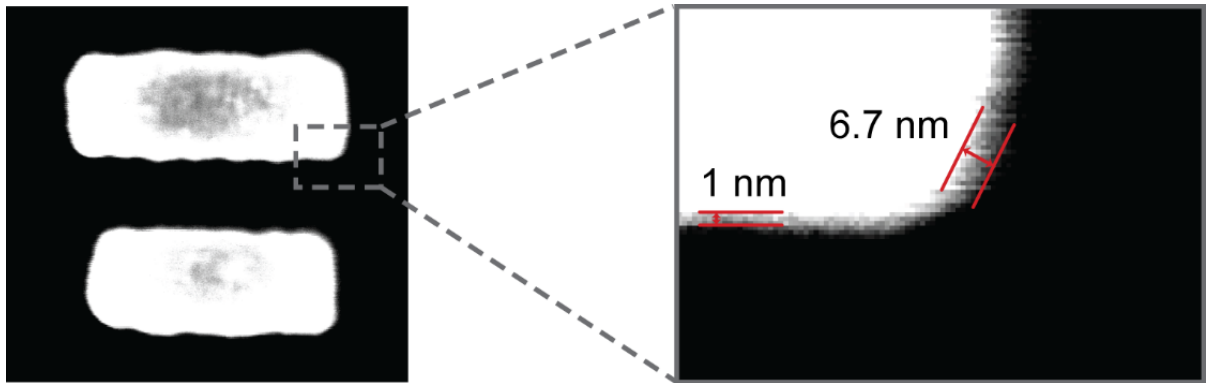


Fig. S2: Estimate of the imaging induced edge roughness of features captured by the SEM system. The amount is in the region of 1 and 7 nm, which quantifies the possible error of the analysis for the images.

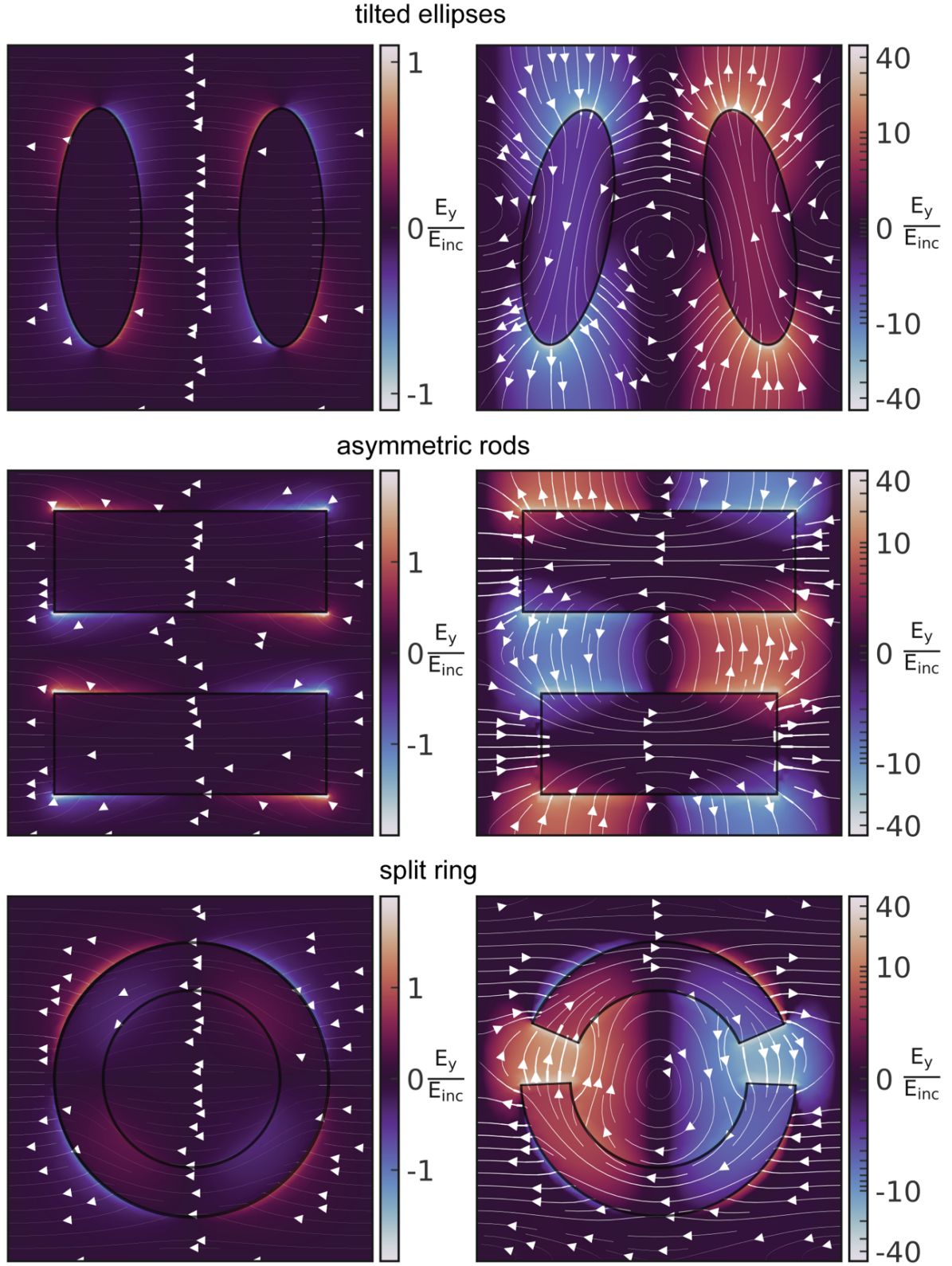


Fig. S3: Simulated y-component of the electric fields for each unit cell design in the x-y resonator. Midplane at $z = 50\text{nm}$ above the silica substrate in the symmetric case on the left and the quasi-BIC with broken in-plane symmetry on the right. The electric field is normalized to the incident wave, showing the field enhancement introduced by the BIC coupling to the far field.

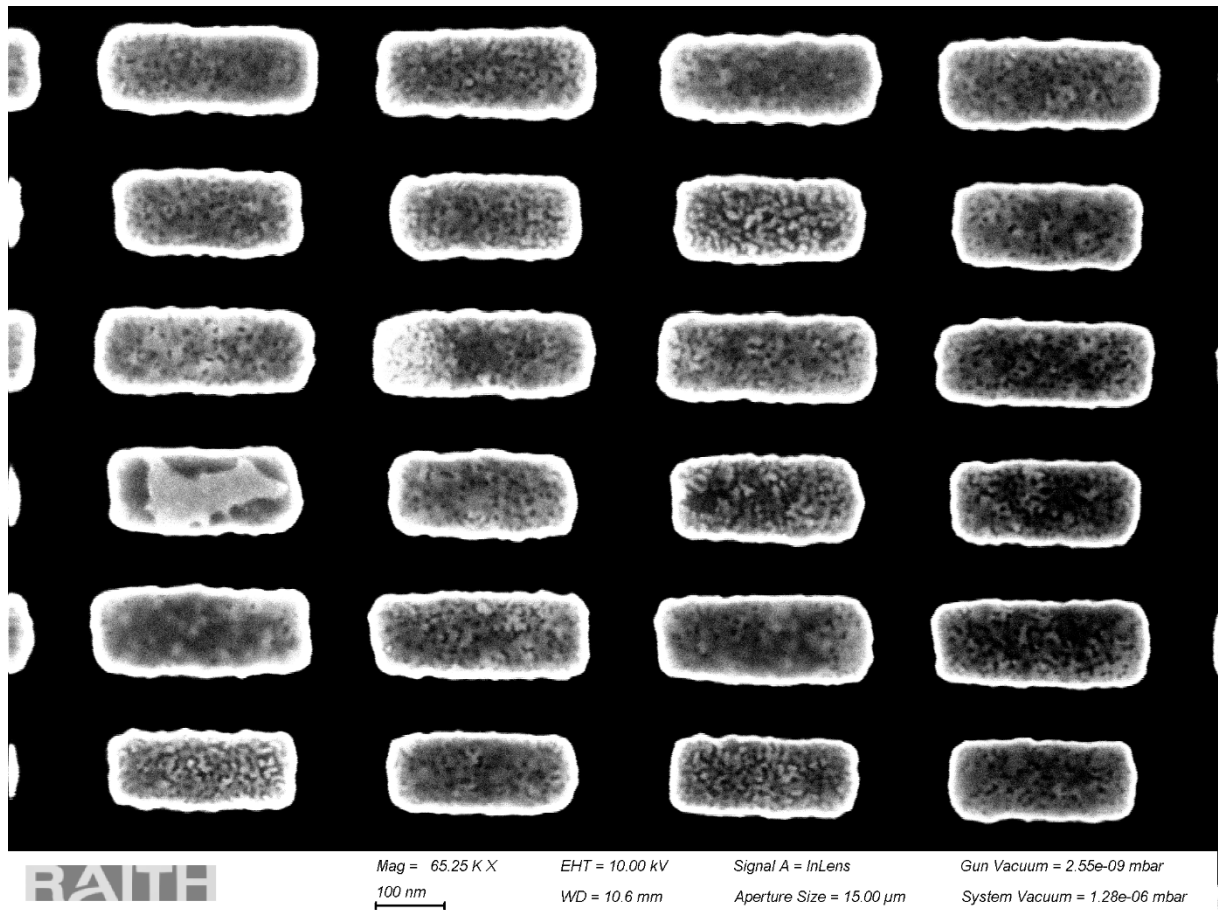


Fig. S4: Exemplary SEM image of the asymmetric rod design. At a total of 10 images containing each 12 unit cells are used for the analysis of geometric variation in a fabricated metasurface.