

## *Supplementary information*

### Strongly coupled evenly divided disks: a new compact and tunable platform for plasmonic Fano resonances

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## S1. The spectral response of EDD-6 under differently polarization angle of incident light

To investigate the effect of polarization angle of incident light, we simulated the extinction spectra of EDD-6 under the polarization of incident light parallel and perpendicular to the gap. The results demonstrated that the polarization of incident light has no significant effect on the spectrum.

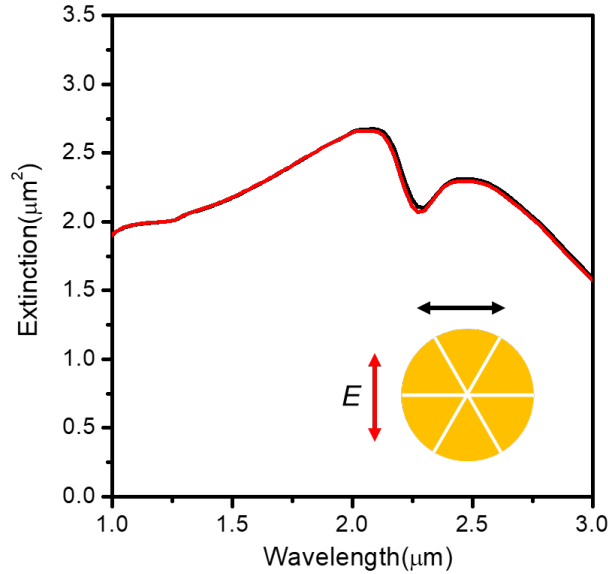


Figure S1. Simulated extinction spectra of single EDD-6 vs incident polarization

## S2. The spectral response of EDD-8 when removing some parts of the EDD-8 disks

We investigated the optical response of EDD-8 with removed 1 to 3 segments. When the polarization of incident light is shown in Figure 2a, the line shape of the extinction spectra of broken EDD-8 is similar to that of complete EDD-8. The modes at each feature position are also same as the complete EDD-8. When the polarization of incident light is shown in Figure 2b, the significant Fano dip disappears, the simulated charge distribution shows that the optical response of the EDD-8 is dominated by the magnetic resonance. These results demonstrated that the generation of the Fano resonance in EDD is due to the collective resonance in EDD. Fano resonance still can be supported if some of the segments of the structure is removed under a specific polarization direction since the break of structural symmetry.

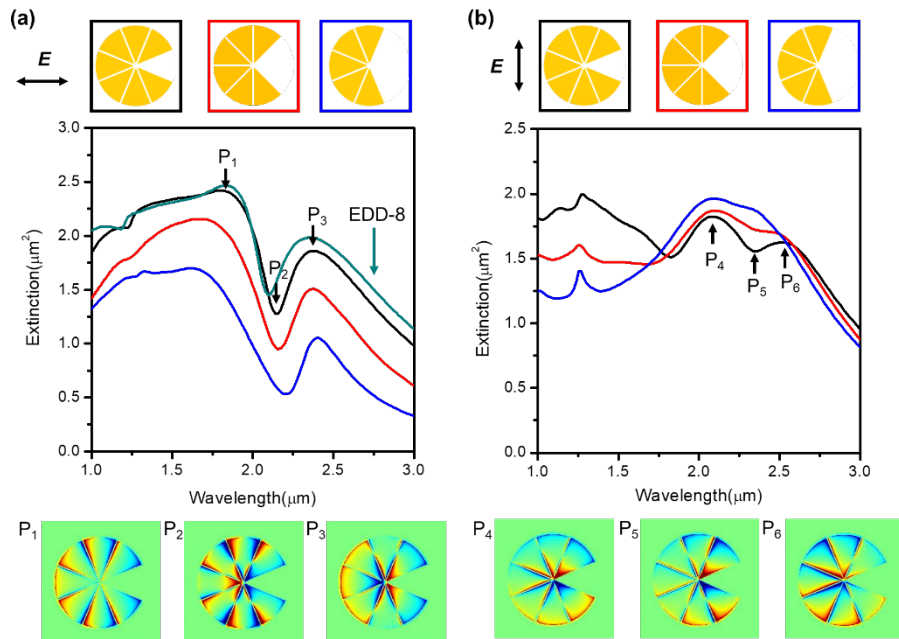


Figure S2. Simulated extinction spectra of single EDD-8 when removing 1-3 segments and corresponding modes at each feature position.