# SUPPLEMENTARY INFORMATION

## Energy Transfer and Depolarization in the Photoluminescence of a Plasmonic Molecule

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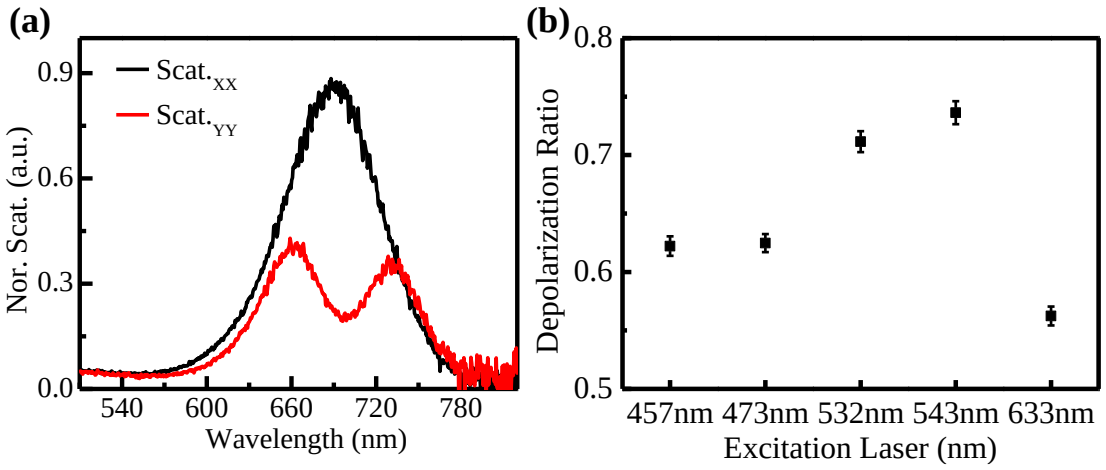


Fig. S1. (a) The DF scattering spectra for the investigated dolmen-like plasmonic molecule, the black and red solid lines represent the two distinct parallel polarization configurations, Scat.$_{XX}$ and Scat.$_{YY}$, respectively. A broad Lorentz-like lineshape with a peak at ~ 688 nm is obtained under excitation-collection polarization along X direction, which is from the radiative emission of the longitudinal bright dipolar mode sustained in the two parallel nanorods. A Fano-like lieshape with a dip at ~ 690 nm is observed under excitation-collection polarization along Y direction, which is ascribed to the strong near-field interaction between the bright dipolar mode in the left single nanorod and the dark quadrupolar mode in the right two parallel nanorods. (b) The calculated depolarization ratio as a function of the excitation wavelength for incident light polarized along Y, each data point is averaged from five molecules.

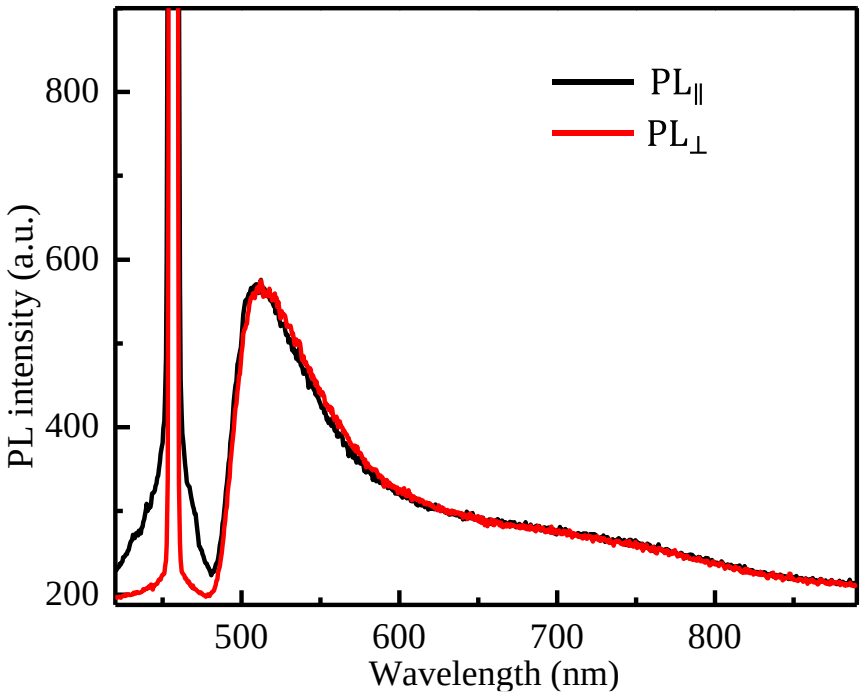


Fig. S2. The completely depolarized PL spectra from the flat gold film under 457 nm laser excitation. It shows complete depolarization characteristics, in terms of lineshape and emission intensity.

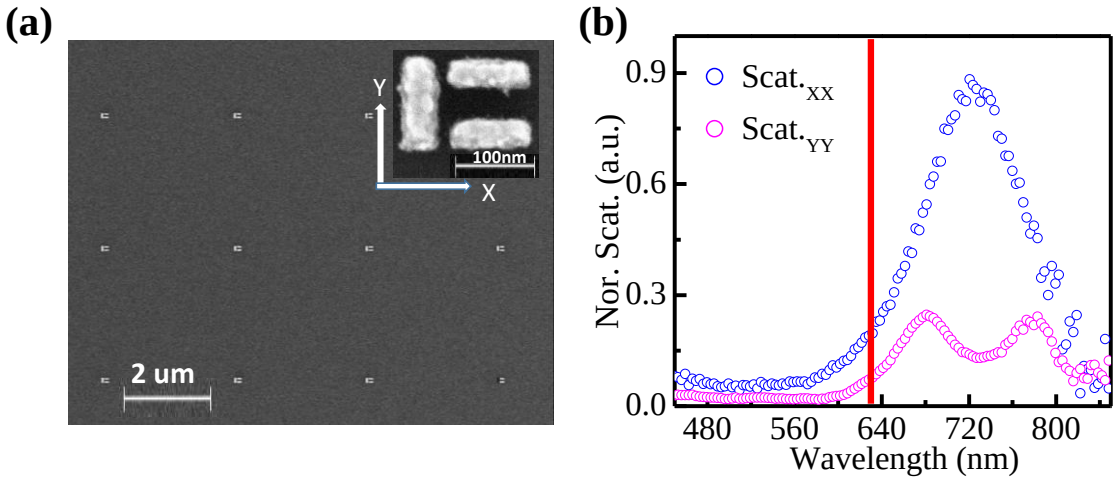


Fig. S3. (a) The SEM image overview of the sample array fabricated on $SiO_2$/Si substrate with 1nm chromium adhesion layer. The period is 3 μm in both X and Y directions. Insert: Enlarged view with scale bar of 100 nm. (b) The DF scattering spectra of this targeted sample, the blue and magenta dotted lines are from the X-X and Y-Y excitation-collection polarization configurations. The red solid line denotes the laser excitation position of 633 nm. (c)