Electronic Supplementary Material (ESI) for Nanoscale Horizons.

Supporting Information

Converting Plasmonic Light Scattering to Confined Light Absorption and Creating Plexcitons by Coupling a Gold Nano-pyramid Array onto a Silica-Gold Film

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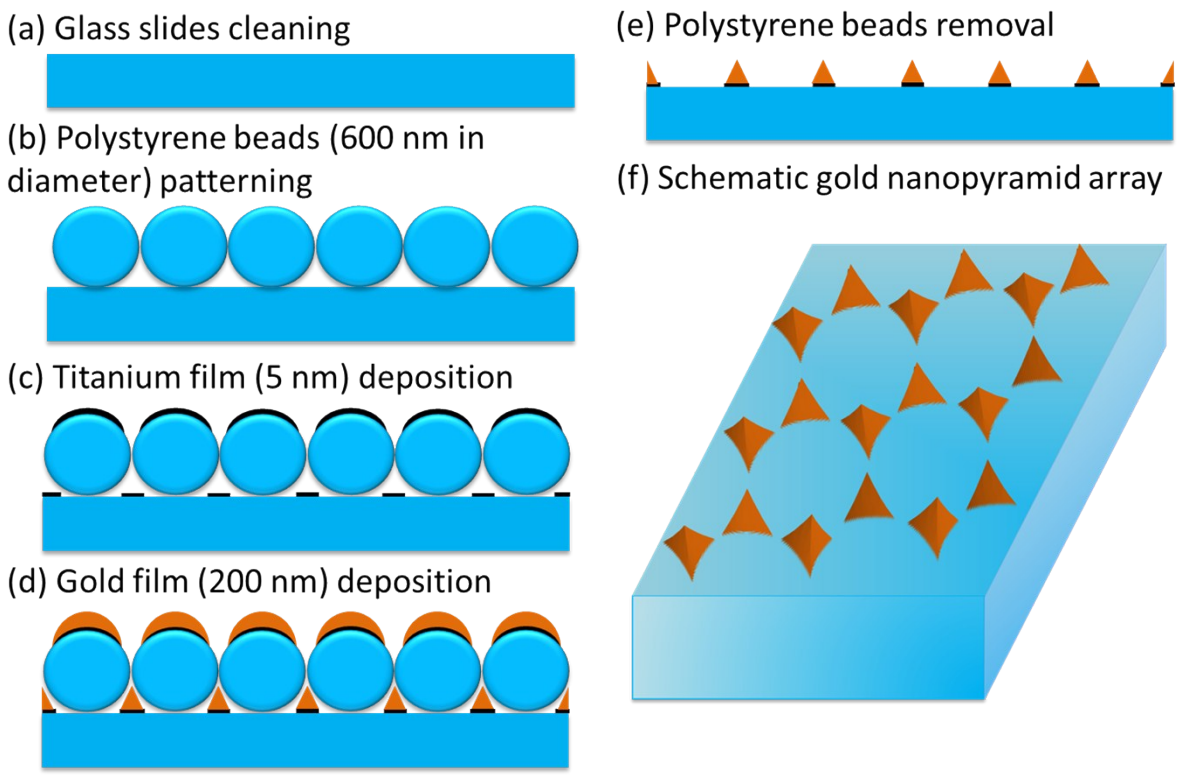

Figure S1. Protocol of nanosphere lithography fabrication for gold nanopyramid array on glass substrate. Polystyrene beads with a diameter of 600 nm were used. 200 nm of gold was deposited.

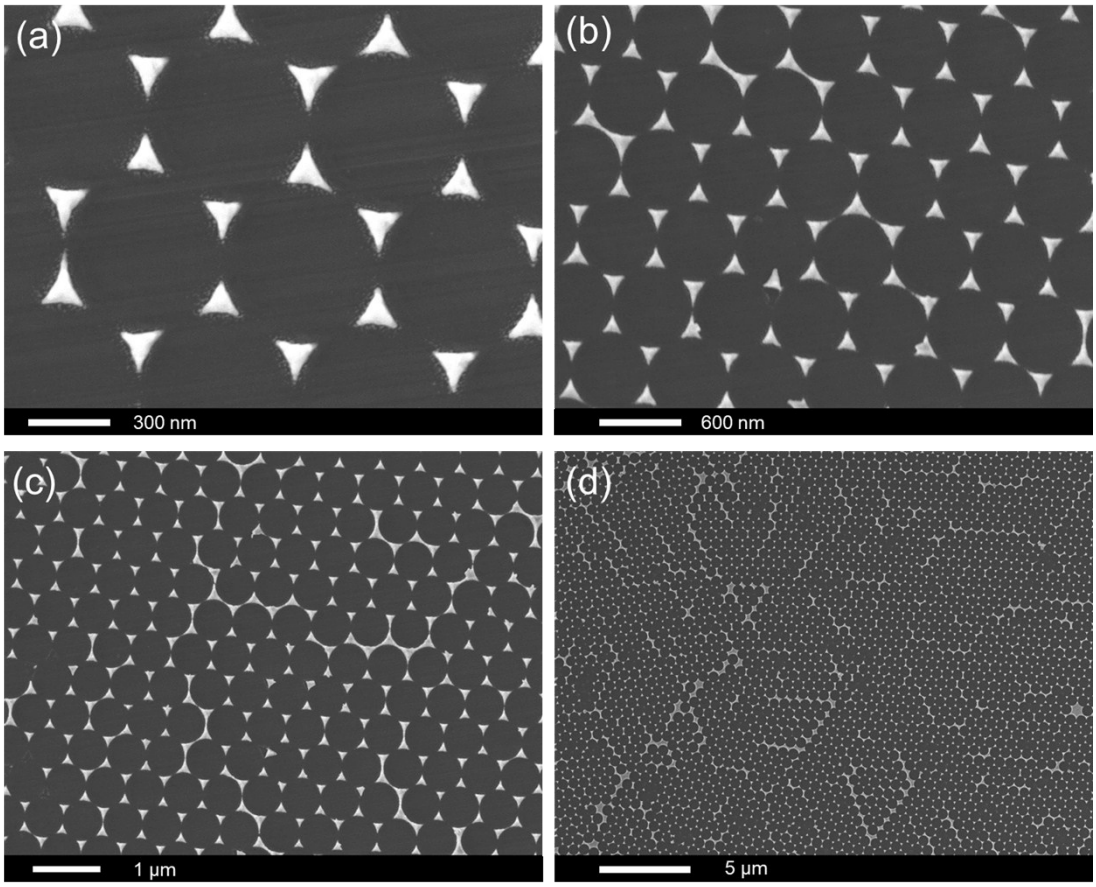

Figure S2. Top-view SEM images of film-coupled gold nanopyramid array under different magnifications.

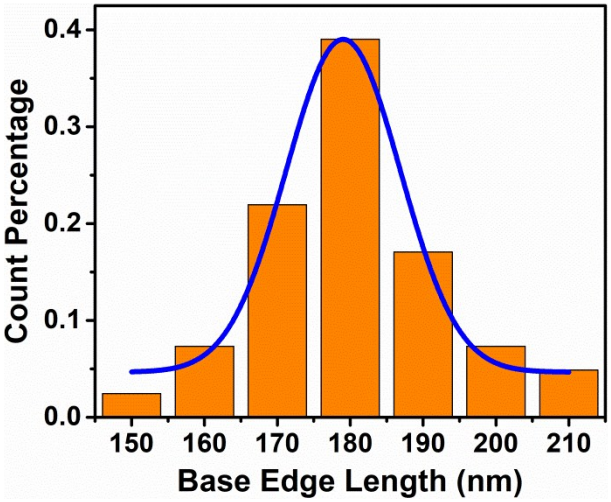

Figure S3. Base edge length histogram for Au nanopyramid arrays fabricated using polystyrene beads with a diameter of 600 nm. The mean value of the base edge length is 179 nm.

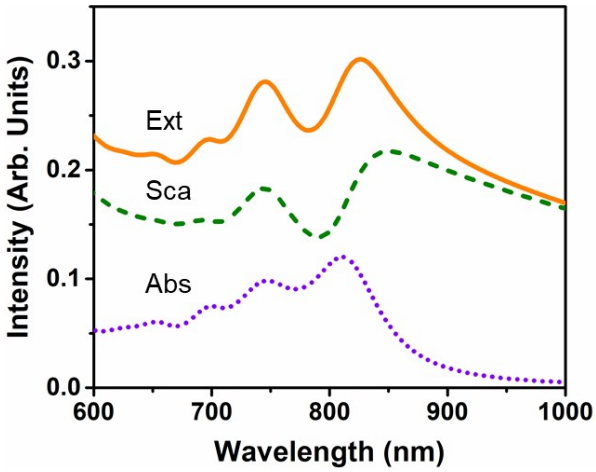

Figure S4. Extinction, scattering and absorption spectra for an Au nanopyramid (179 nm in base edge length and 200 nm in height) on glass.

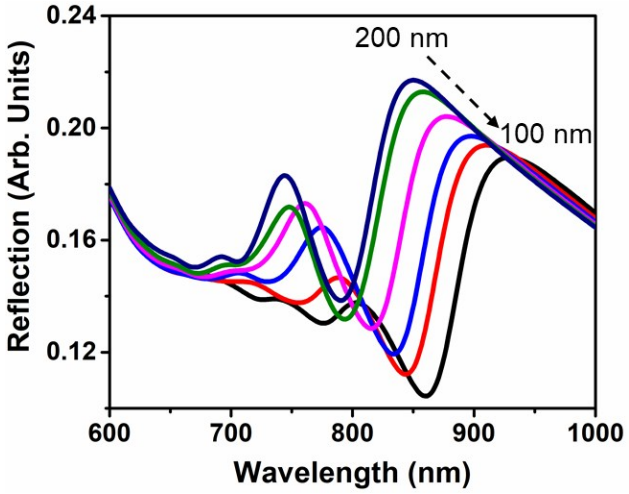

Figure S5. The major reflection peak corresponding to the plasmonic corner mode red shifts with a decrease of the height of Au nanopyramid array on glass, where its base edge length is fixed at 179 nm.

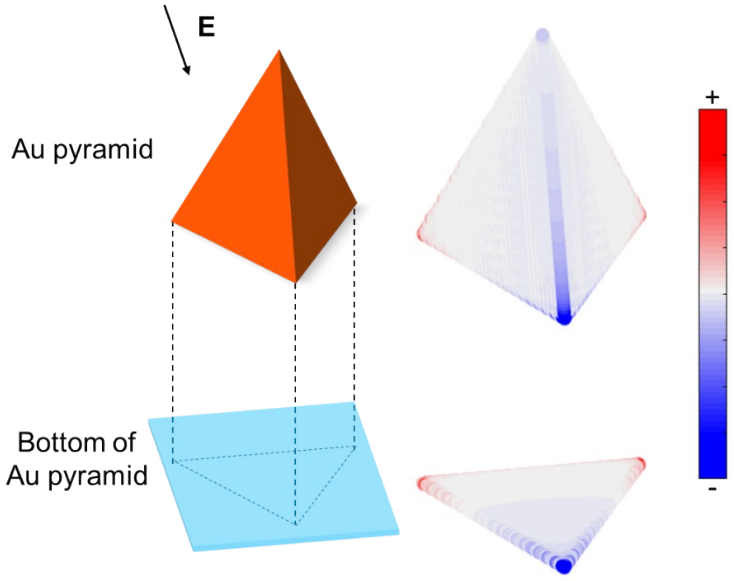

Figure S6. Surface polarization charge distribution at the reflection peak wavelength (850 nm) for an Au nanopyramid (179 nm in base edge length and 200 nm in height) on glass.

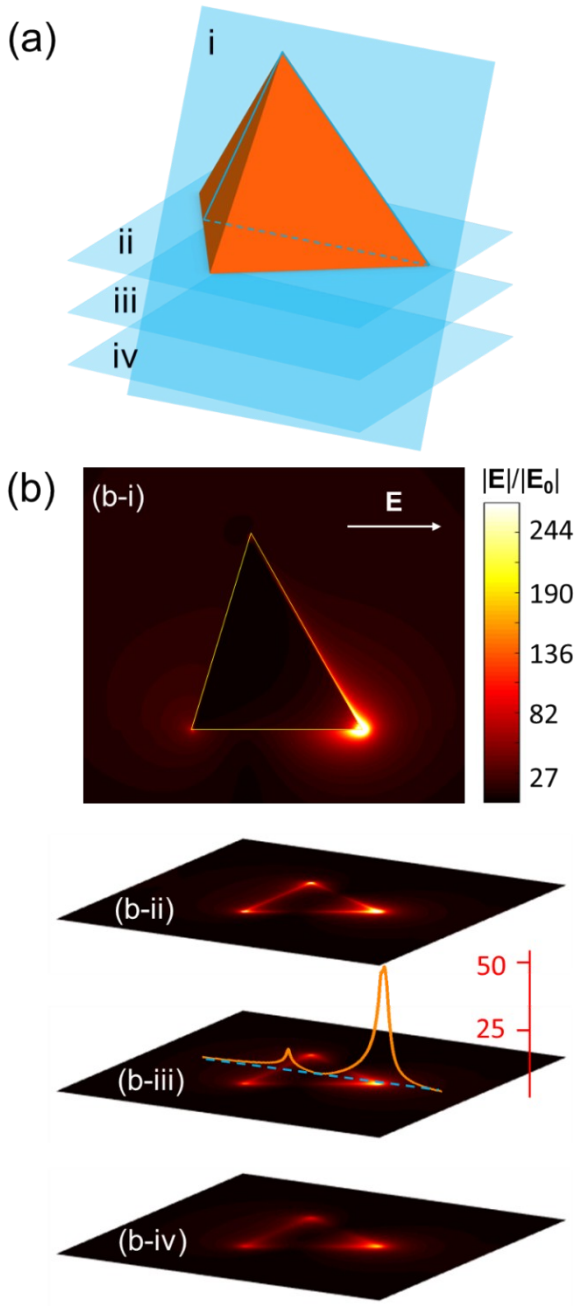

Figure S7. Electric field enhancement of Au nanopyramid array (179 nm in base edge length and 200 nm in height) on glass. (a) Scheme of the four cross sections on which the electric field enhancements are extracted, where ii, iii, and iv are 2.5 nm, 5 nm, and 7.5 nm away from the bottom of Au nanopyramid, respectively; (b) Electric field enhancement on the cross sections specified in (a). Arrows indicate the incident electric field polarization direction. The inserted orange line and red scale in (b-iii) are the profiles for the electric field enhancement along the corresponding dashed line.

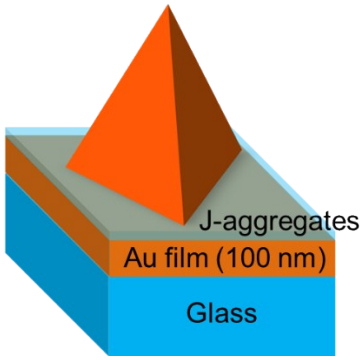

Figure S8. Scheme of the film-coupled gold nanopyramid array structure with a layer of thickness-varying J aggregates sandwiched at the spacer layer.