Supporting Information

Far-field and near-field monitoring of hybridized optical modes from Au

nanoprisms suspended on a graphene/Si nanopillar array

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	R0	R75	R95	R110	R120
Diameter (nm)	517.7 ± 12.1	367.9 ± 11.1	268.8 ± 11.4	180.6 ± 15.2	132.3 ± 10.7
Height (nm)	497.7 ± 59.0	497.1 ± 27.5	479.6 ± 30.7	489.6 ± 30.9	508.2 ± 31.3

Table S1. The Au/graphene/Si hybrids with different nanopillar diameters.

Table S2. The Au/graphene/Si hybrids for R115 with different Si nanopillar heights.

R115	14m	16m	18m	20m	22m	24m	26m			
Diameter (nm)	177.5 ± 11.8									
Height (nm)	268.6 ± 66.7	342.9 ± 57.0	379.9 ± 23.7	513.5 ± 40.8	612.7 ± 57.5	657.1 ± 60.6	746.4 ± 64.6			



Figure S1. (a) The diameter of periodic silicon nanopillars as a function of RIE time. The inset shows the top-view SEM image of the etched PS mask, and the scale bar is 500 nm. (b) The height of periodic silicon nanopillars as a function of MacEtch time. The inset shows the cross-section SEM image of the silicon nanopillars, and the scale bar is 500 nm.



Figure S2. (a) The topography of the Au/graphene/Si hybrid with the nanopillar diameter of 178 nm and the nanopillar height of 514 nm (R115 (20m)) measured by atomic force microscopy. The out-of-plane height distribution obtained from (a) is shown in (b), and the cross section of two gold nanoprisms facing tip-to-tip is shown in the inset.



Figure S3. The baseline-corrected Raman spectra of graphene for the Au/graphene/Si hybrid with the nanopillar diameter of 178 nm and the nanopillar height of 514 nm (R115, 20m) measured by 532 nm excitation laser. The red dotted line indicates the absence of D band (1345 cm⁻¹) of graphene.



Figure S4. The normalized reflectance spectra by FDTD simulation for the Au/graphene/Si hybrids with different nanopillar (a) diameters (at a fixed nanopillar height of 500 nm), and (b) heights (at a fixed nanopillar diameter of 178 nm).