Supporting Information for

Vertical Plasmonic Resonant Nanocavities

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Angular distribution of backscattered electrons

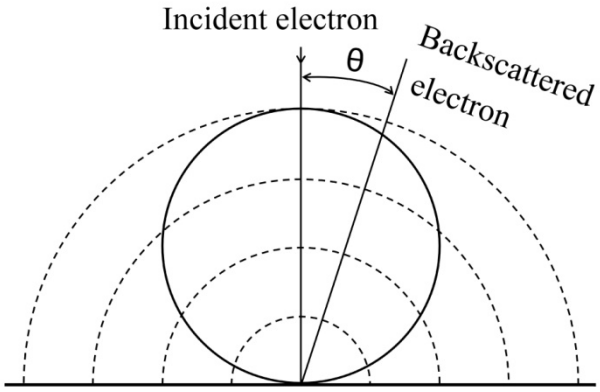

Figure S1. Angular distribution of the backscattered electrons when the incident electron beam impinges on the plane surface under normal incident. The nature of the backscattered electrons is of the similar energy as that of incident electrons and cosθ distribution above the sample surface.

Topography of plasmonic vertical nanocavities

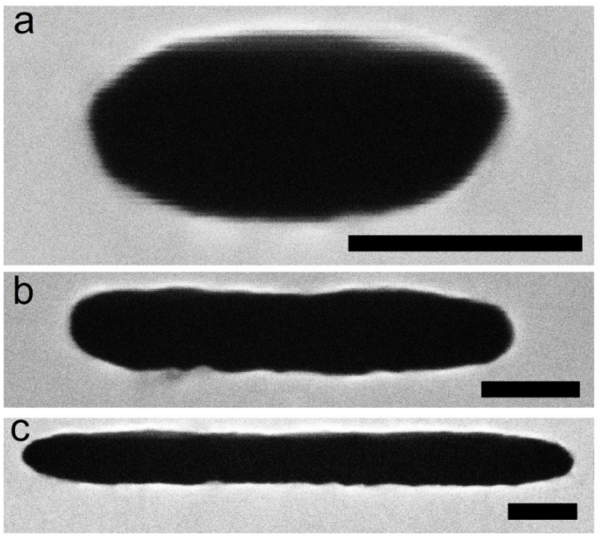

Figure S2. Top-view SEM images of plasmonic vertical nanocavities with 70 nm-width, 500 nm-height and (a) 120 nm, (b) 360 nm, (c) 770 nm-length. Scale bar are 100 nm.

Dispersion relation

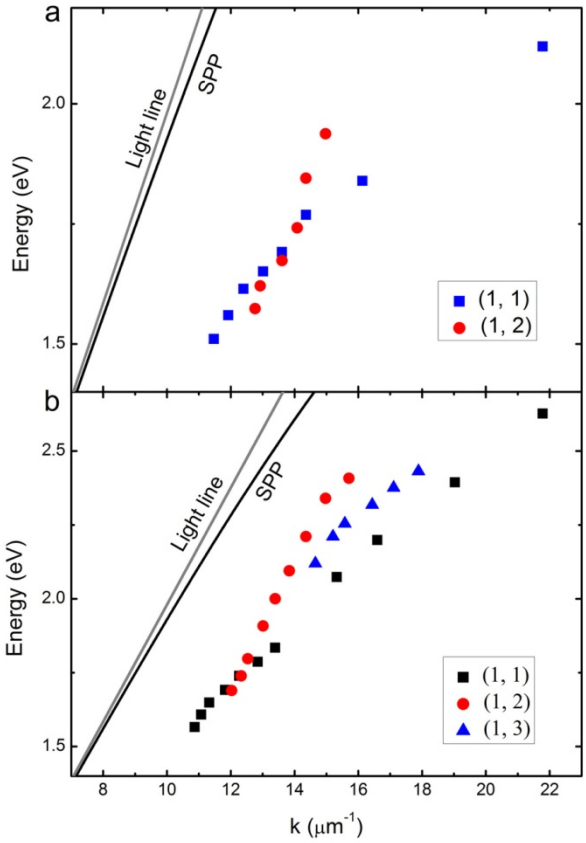

Figure S3. Experimental dispersion of different plasmonic mode in vertical nanocavities with (a) 40 nm, and (b) 120 nm-cavity width. The dispersion relation was acquired from the resonant wavelengths in Figure 4 according to eq 1. Grey line and black line represent light line in vacuum and dispersion of a SPP on an infinite Ag film, respectively.

Two other types of plasmonic nanocavities

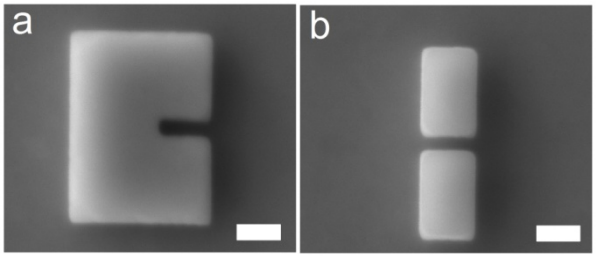

Figure S4. Topography of plasmonic vertical nanocavities with (a) two and (b) three air reflectors and the height is 500 nm. Scale bar are 500 nm.