

Supporting Information

Structurally and Compositionally Tunable Absorption Properties of AgCl@AgAu Nanocatalysts for Plasmonic Photocatalytic Degradation of Environmental Pollutants

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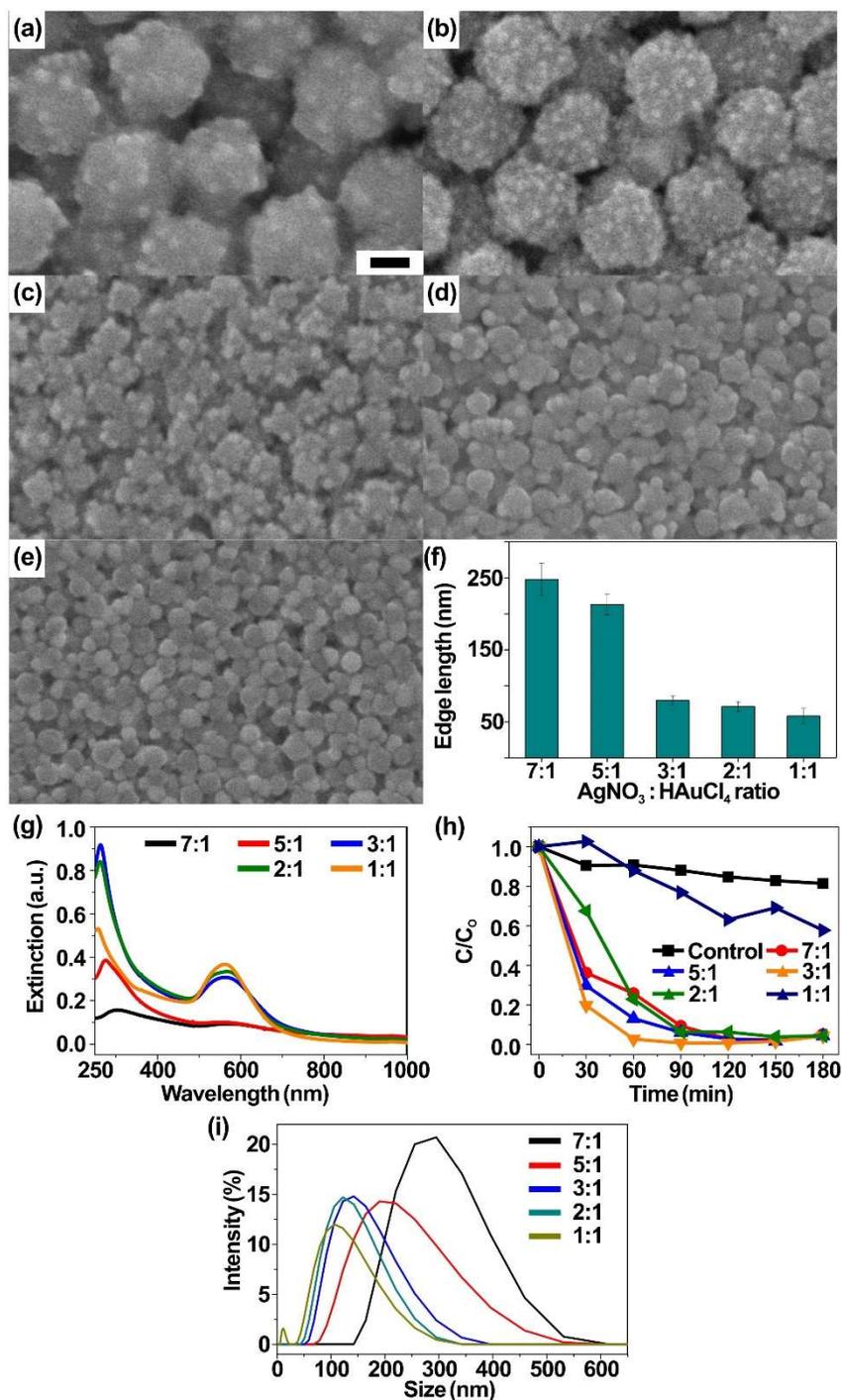


Figure S1. The AgCl@AgAu NPs with different diameters were synthesized with different mole ratios of AgNO₃ and HAuCl₄. (a-e) SEM images of the AgCl@AgAu NPs synthesized with different mole ratios of AgNO₃ and HAuCl₄ at (a) 7:1, (b) 5:1, (c) 3:1, (d) 2:1, and (e) 1:1. The scale bar is 100 nm. (f) The diameters of the AgCl@AgAu NPs are shown as a function of the mole ratio of AgNO₃ and HAuCl₄. (g) UV-vis spectra and (h) time-dependent photocatalytic degradation of amaranth under visible light irradiation with the AgCl@AgAu NPs with different sizes (Figures S1a-S1e). (i) Size distributions of the AgCl@AgAu NPs with different sizes were obtained using dynamic light scattering (DLS).

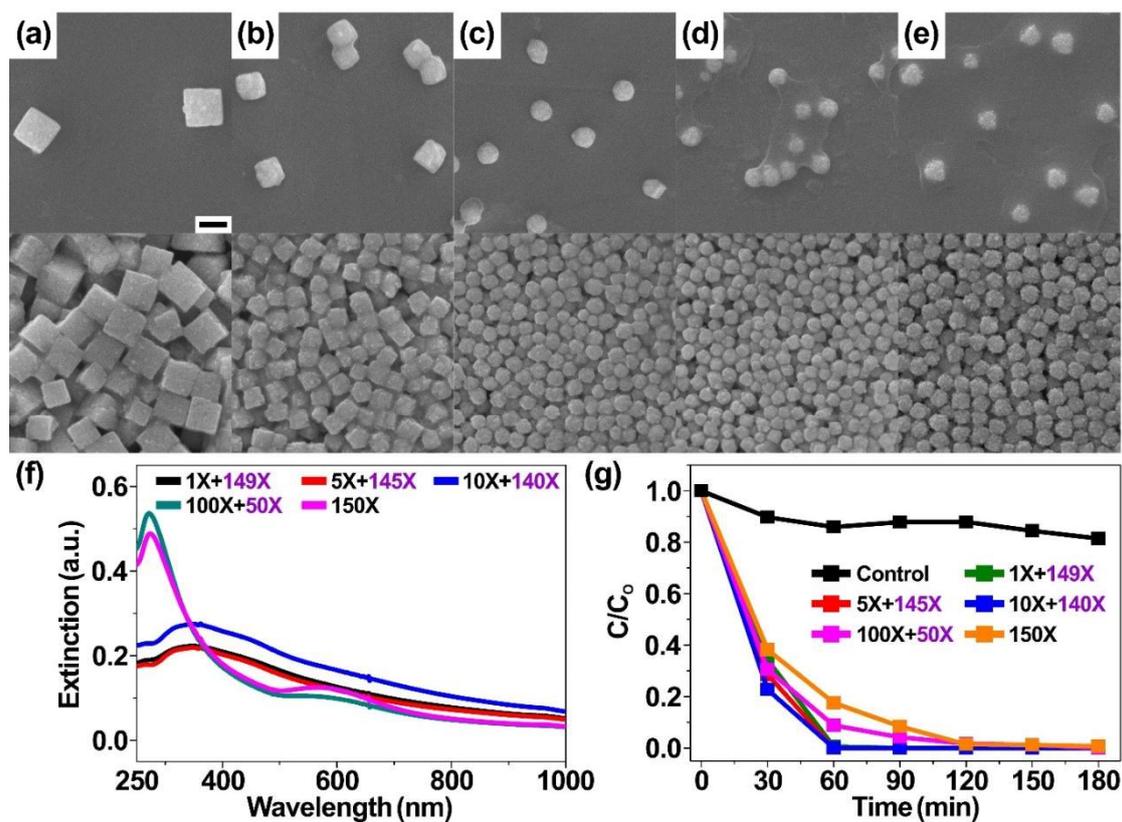


Figure S2. The AgCl@AgAu NPs synthesized with 55k PVP with different shapes. (a-e) SEM images of the AgCl NPs synthesized with 55k PVP having different initial concentrations (upper row), and the corresponding AgCl@AgAu NPs after the formation of metallic bumps using concentrated PVP (lower row). The concentrations of the initial 55k PVP were (a) 1X (0.0357 g/L), (b) 5X (0.178 g/L), (c) 10X (0.357 g/L) (d) 100X (3.571 g/L), and (e) 150X (5.356 g/L), respectively, and the final concentration of 55k PVP was 150X (5.356 g/L) in common. The scale bar is 250 nm. (f) UV-vis spectra of the AgCl@AgAu NPs synthesized with 55k PVP with different shapes. (g) Time-dependent photocatalytic degradation of amaranth with the AgCl@AgAu NPs synthesized with 55k PVP with different shapes.

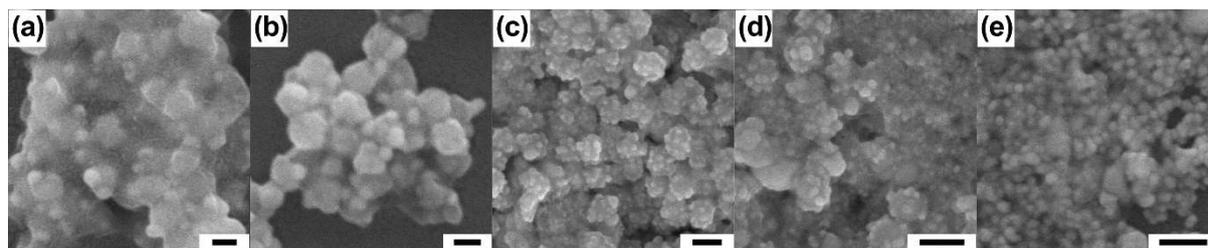


Figure S3. The stability of the AgCl@AgAu NPs with different shapes (shown in Figure S2) which were synthesized with different initial concentrations of 55k PVP. (a-e) SEM images of the AgCl@AgAu NPs after the photocatalytic degradation of amaranth for 24 h. All scale bars are 150 nm.