

Supporting Material for

Ultrabroad Spectral Response and Excellent SERS Performance of PbS-assisted Au/PbS/Au Nanostars

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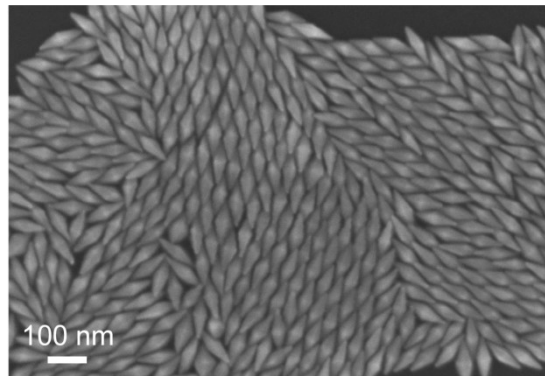


Figure S1. SEM image of Au nanobipyramids.

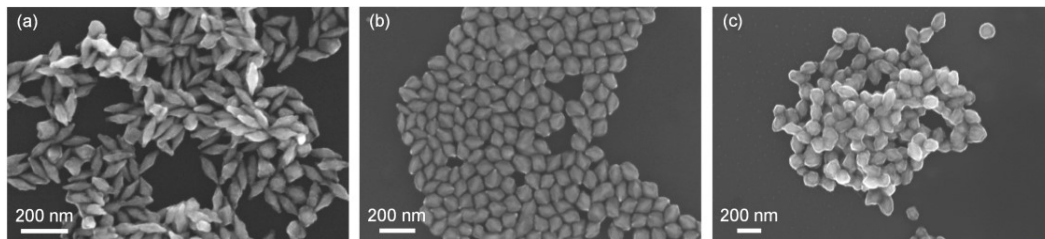


Figure S2. SEM images of Au BPs@PbS nanoparticles prepared by adding different amounts of Pb(Ac)₂, (a) 5 μL, (b) 20 μL, (c) 50 μL. The concentration of Pb(Ac)₂ is 0.01 M.

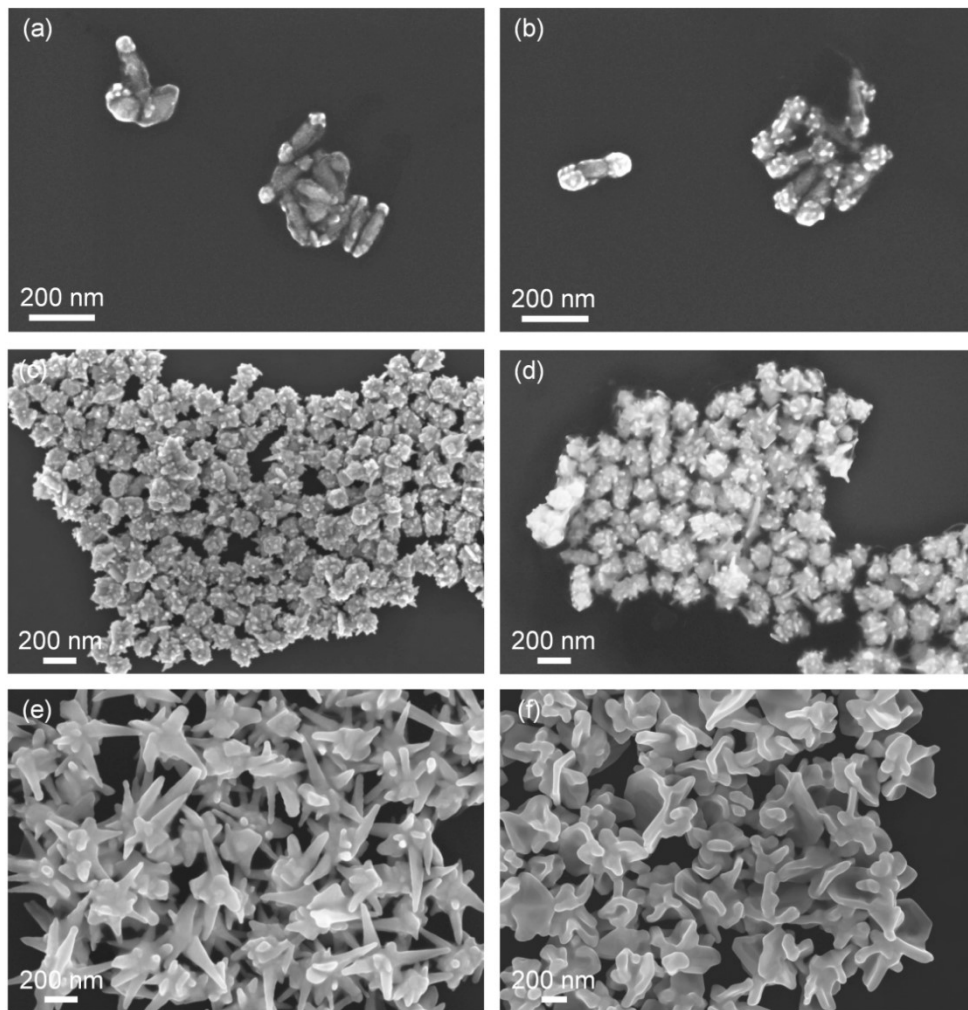


Figure S3. SEM images of Au/PbS/Au nanostars prepared with adding different amount of HAuCl_4 . The amount of HAuCl_4 is (a) 5 μL (5 mM), (b) 20 μL (5 mM), (c) 100 μL (5 mM), (d) 50 μL (15 mM), (e) 200 μL (15 mM), (f) 500 μL (15 mM).

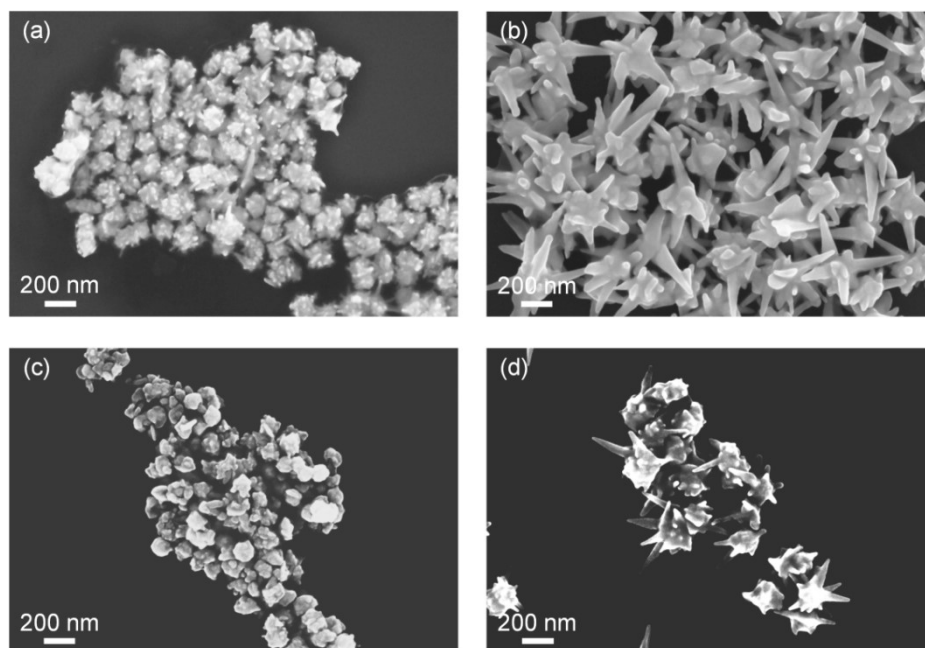


Figure S4. SEM images of Au/PbS/Au nanostars without/with the addition of HCl. (a) Au/PbS/Au nanostars with 50 μL HAuCl_4 without HCl. (b) Au/PbS/Au nanostars with 200 μL HAuCl_4 without HCl. (c) Add HCl to the sample in figure S4(a). (d) Add HCl to the sample in figure S4(b).

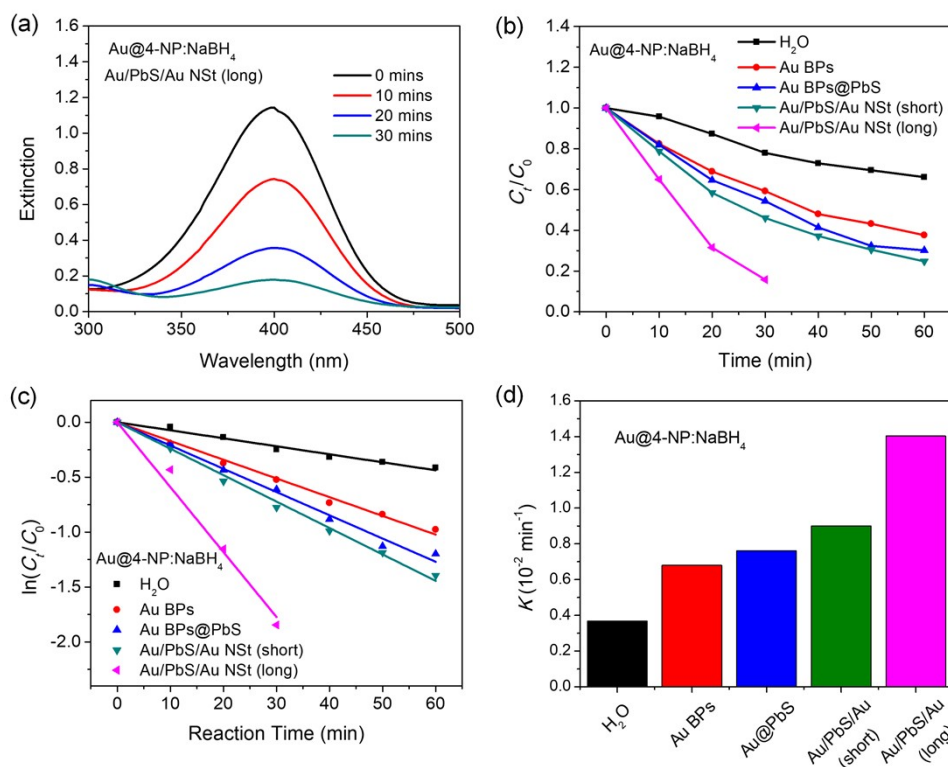


Figure S5. Size of photocatalytic activity of different nanoparticles in 4-NP:NaBH₄. (a) Extinction spectra of 4-NP:NaBH₄ with Au/PbS/Au nanostars (Au(180)) recorded at the reaction time of 0, 10, 20, and 30 mins. (b) Peak extinction intensity at 664 nm of 4-NP molecules as a function of reaction time t . (c) Catalytic degradation curves of 4-NP over different catalysts. (d) Reaction rate K for different samples.

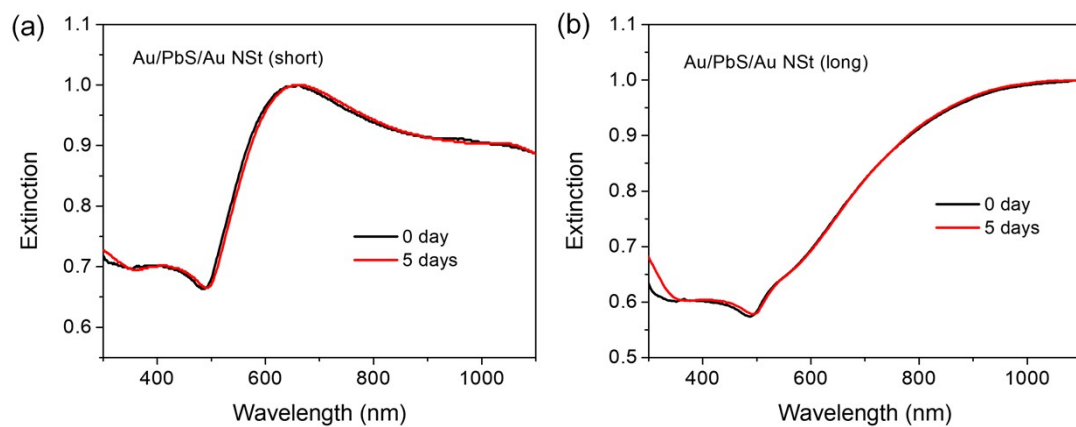


Figure S6. Normalized extinction spectra of Au/PbS/Au nanostars (short) (Au(50)) (a) and Au/PbS/Au nanostars (long) (Au(200)) (b) with 0 day and 5 days.