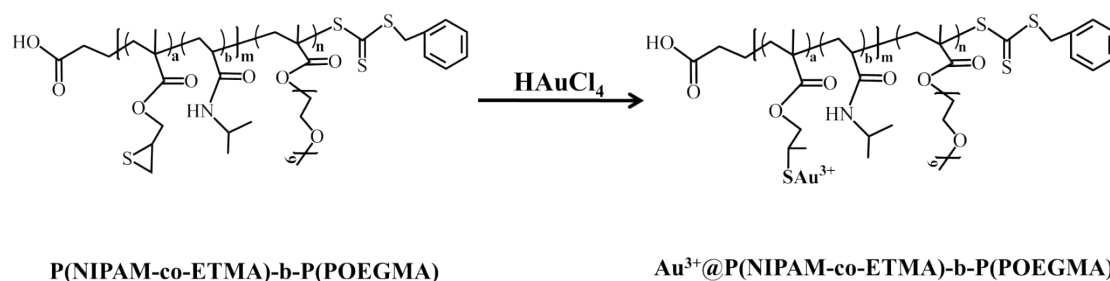


Supporting Information for *RSC Advances*

Electronic Supporting Information

Facile synthesis of thermo-responsive episulfide group-containing diblock copolymers as robust protecting ligands of gold nanoparticles for catalytic applications

Dongmei Wang, Bingxin Liu, Jianhua Lü and Changli Lü*



Scheme S1 Schematic illustration of Au³⁺ induced episulfide opening reaction.

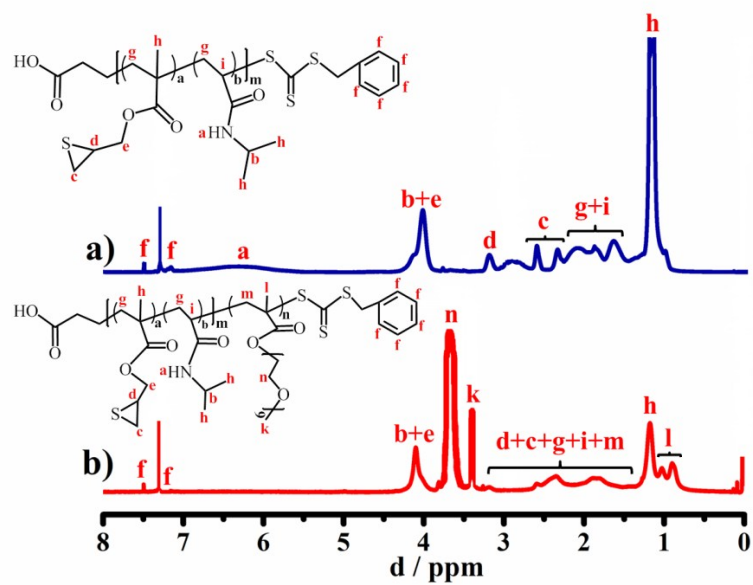


Fig. S1 ^1H NMR spectrum of A2-CTA (a) and P 2 (b) (500 MHz, CDCl_3).

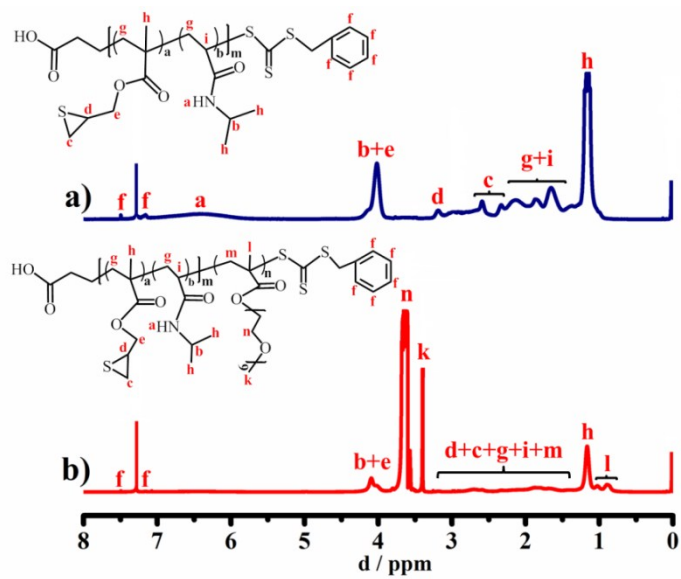


Fig. S2 ^1H NMR spectrum of A3-CTA (a) and P 3 (b) (500 MHz, CDCl_3).

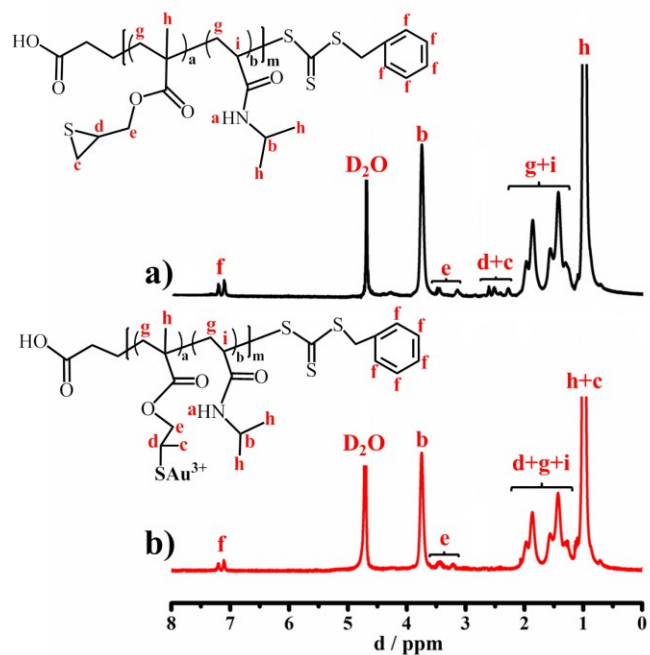


Fig. S3 ¹H NMR spectrum of A1-CTA (a) and Au³⁺@A1-CTA (b) (500 MHz, D₂O)

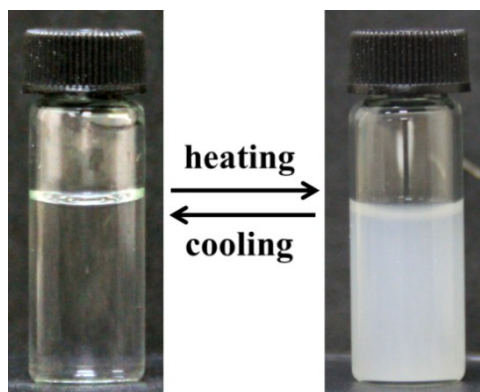


Fig. S4 Digital photographs of P1 aqueous solution upon different temperatures (sample concentration: 12 mg/mL).

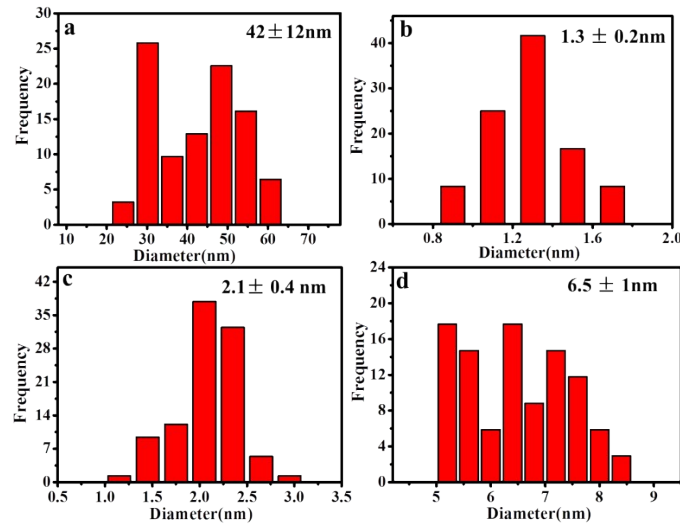


Fig. S5 Micelle (a) and Au particle (b-d) size distribution histograms of the Au@P1 prepared at different MRs of 1/30 (a), 1/10 (b), 1/5 (c) and 1/2 (d).

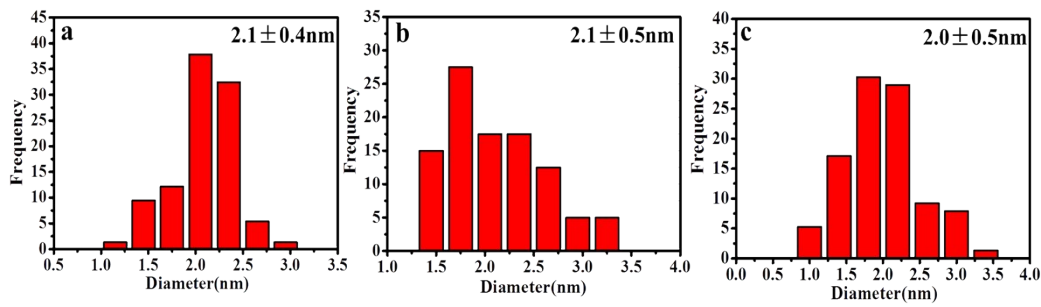


Fig. S6 Au particle size distribution histograms of the Au NPs@P1 (a), Au NPs@P2 (b), Au NPs@P2 (c) with same MR (1/5).

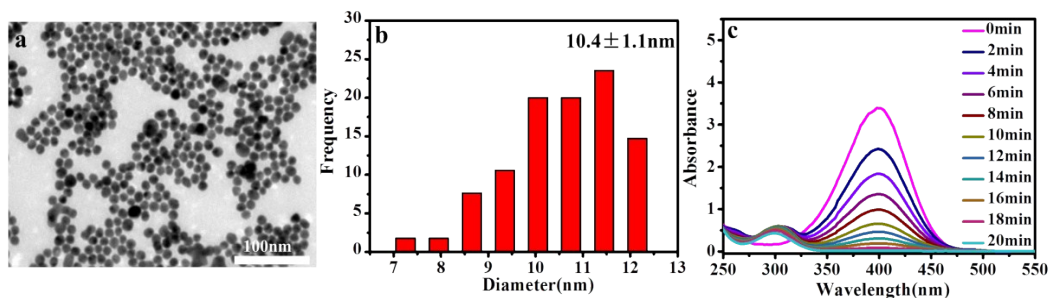


Fig. S7 TEM image (a) and diameter distribution histogram (b) of Au NPs@citrate. Time-dependent UV-vis spectra (c) of 4-NP catalyzed using Au NPs synthesized by citrate reduction. 3 mL of 0.125 mM 4-NP, 20 μ L of 173 μ M Au NPs as catalyst and 400 μ L of 0.22 M NaBH₄ were used for the reduction of 4-NP.

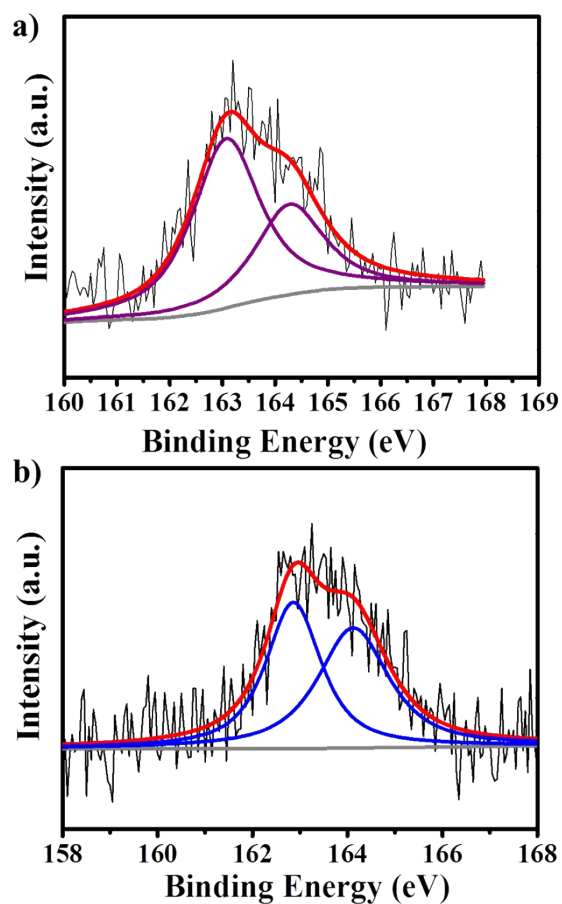


Fig. S8 Sulfur 2p XPS spectra of P1 (a), Au NPs @P1 (MR=1/2) (b).

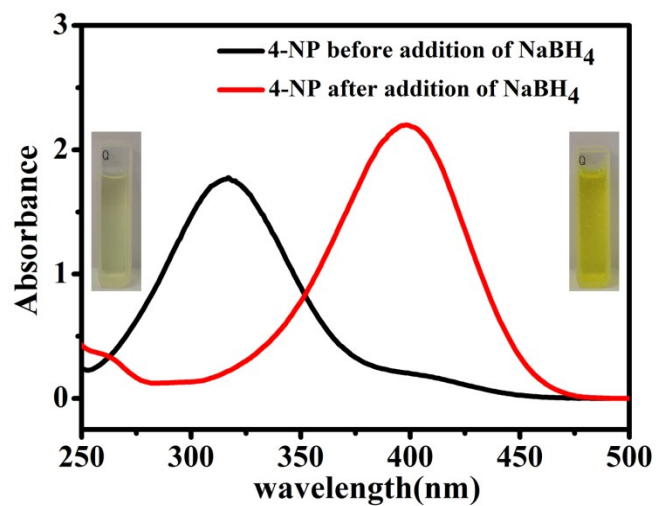


Fig. S9 UV-vis spectra of 4-nitrophenol solution with Au NPs@P1 (MR=1/2) before and after the addition of NaBH₄.

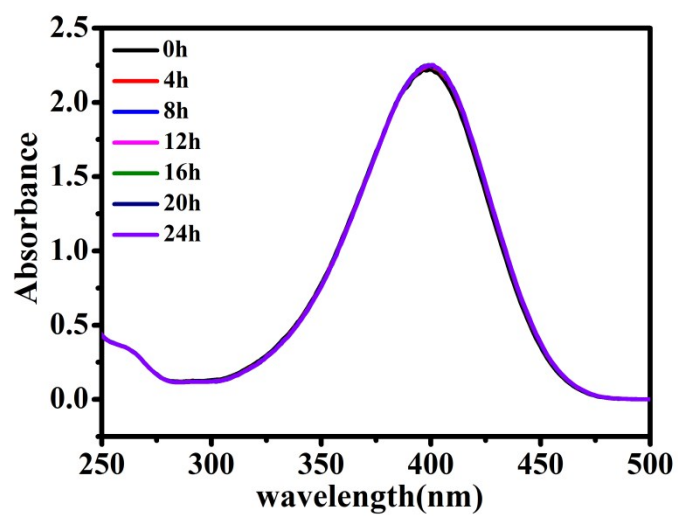


Fig. S10 UV-vis spectra of 4-nitrophenol solution with NaBH₄ without Au NPs @P1 catalyst.

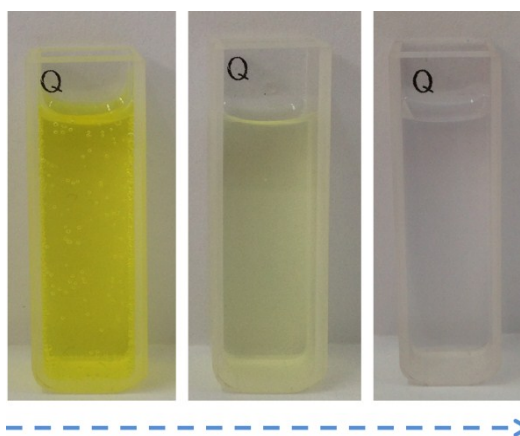


Fig. S11 Color change from yellow to colorless for 4-nitrophenol solution with NaBH₄ using Au NPs @P1 as catalyst.