

Electronic supplementary information (ESI) for
Au nanodumbbells catalyzed the cutting of graphene
oxide sheets upon plasmon-enhanced reduction

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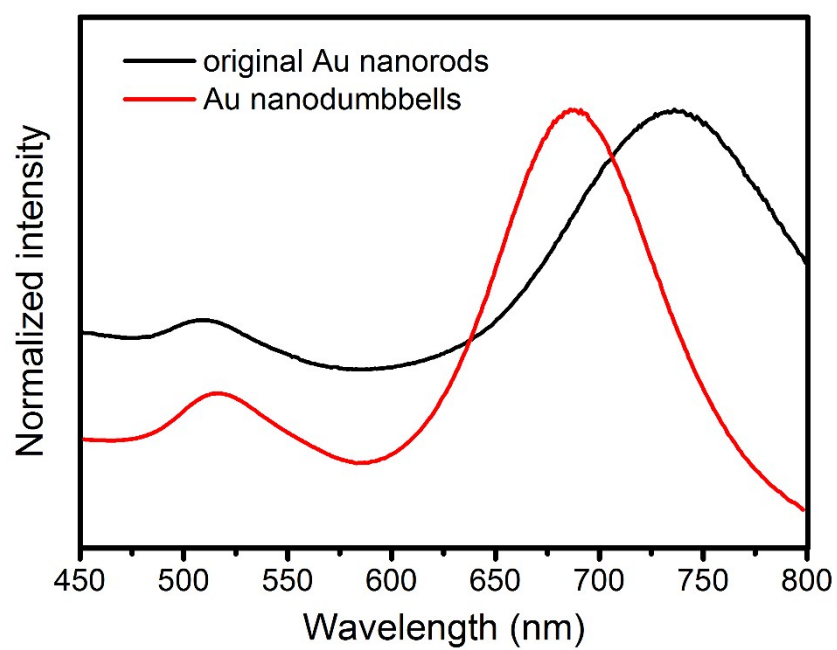


Figure S1. UV-vis spectra of original Au nanorods and dumbbell-like Au nanorods.

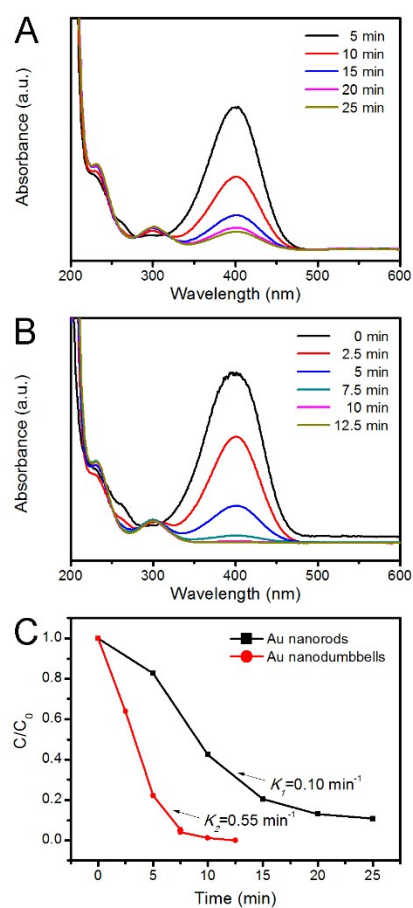


Figure S2. (A) UV-vis spectra of the reduction product of 4-nitrophenol catalyzed by straight Au nanorods. (B) UV-vis spectra of the reduction product of 4-nitrophenol catalyzed by dumbbell-like Au nanorods. (C) Time dependent degradation rate of 4-nitrophenol catalyzed by Au nanorods and dumbbell-like Au nanorods.

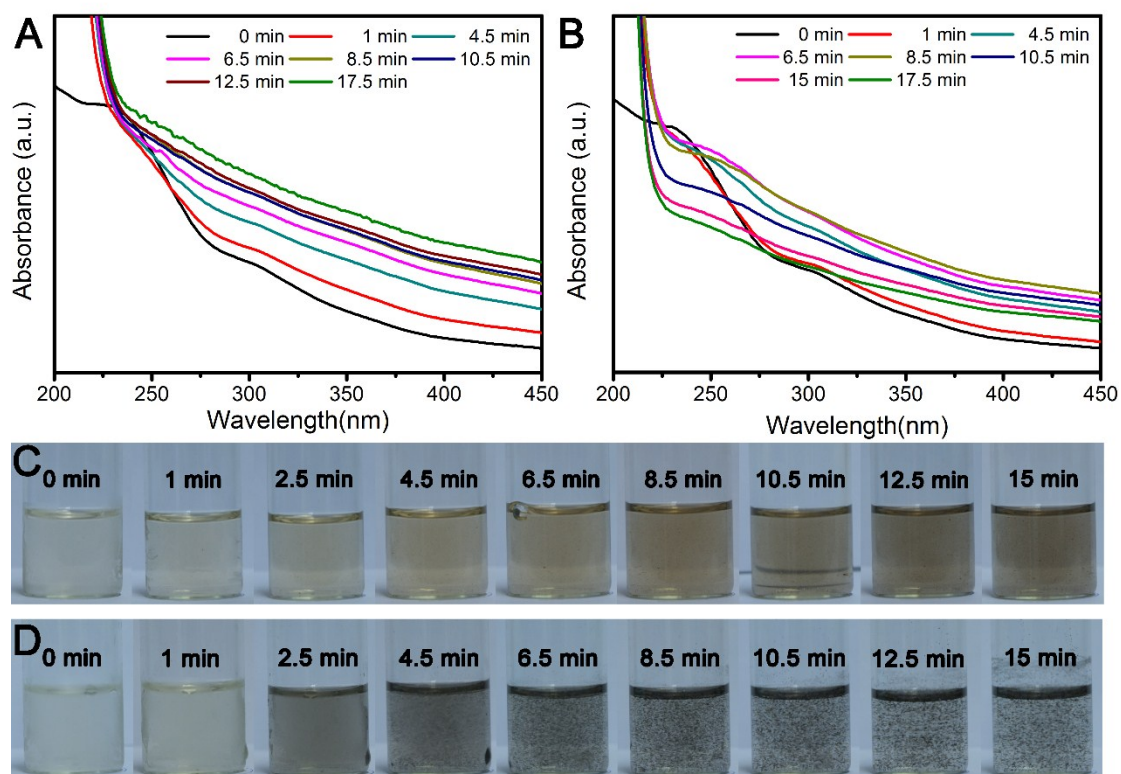


Figure S3. (A) UV-vis spectra of the visible light assisted reduction product of GO sheets without Au catalyst at different time intervals. (B) UV-vis spectra of the reduction product of GO sheets catalyzed by dumbbell-like Au nanorods at different time intervals (without visible light assistance). (C) Physical images of the reduction product in (A). (D) Physical images of the reduction product in (B).

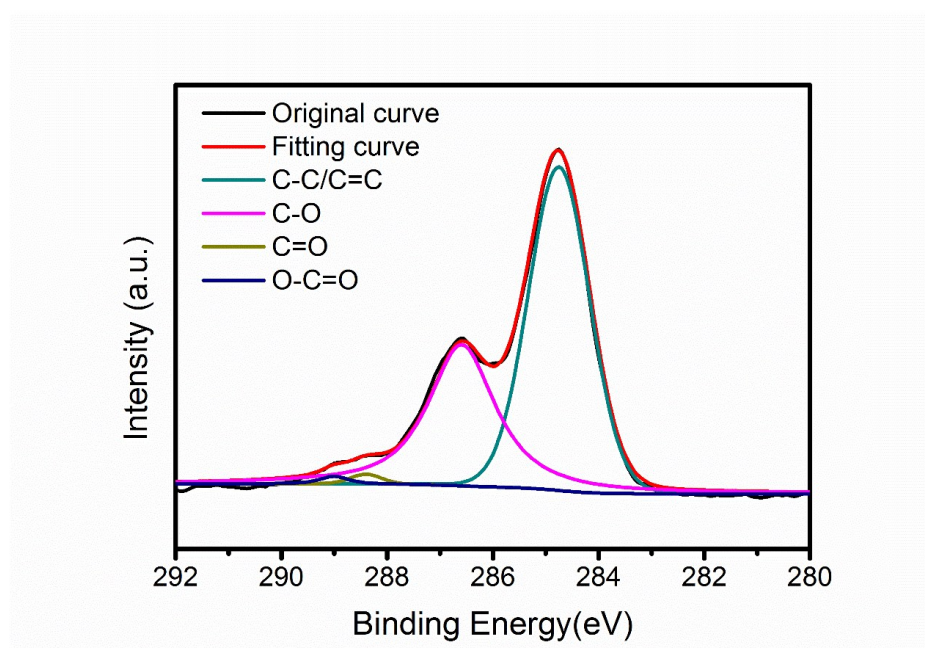


Figure S4. C1s XPS spectra of final reducing product at 15 min without the presence of Au nanorods.

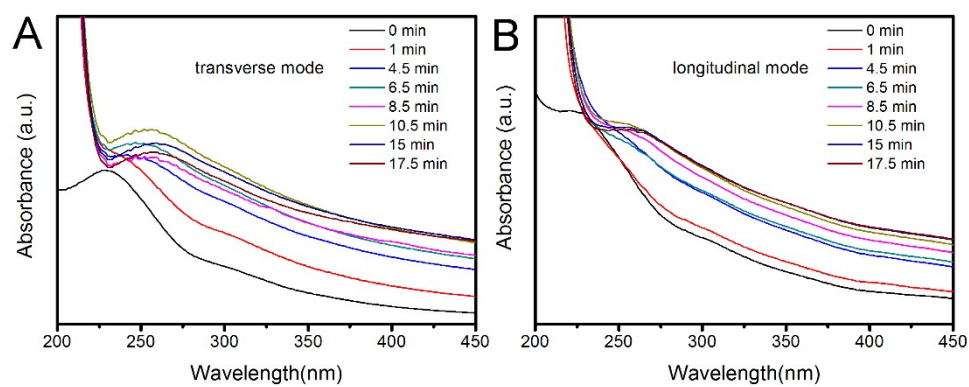


Figure S5. UV-vis spectra of the visible light assisted reduction product of GO sheets catalyzed by dumbbell-like Au nanorods in (A) transverse mode and (B) longitudinal mode.

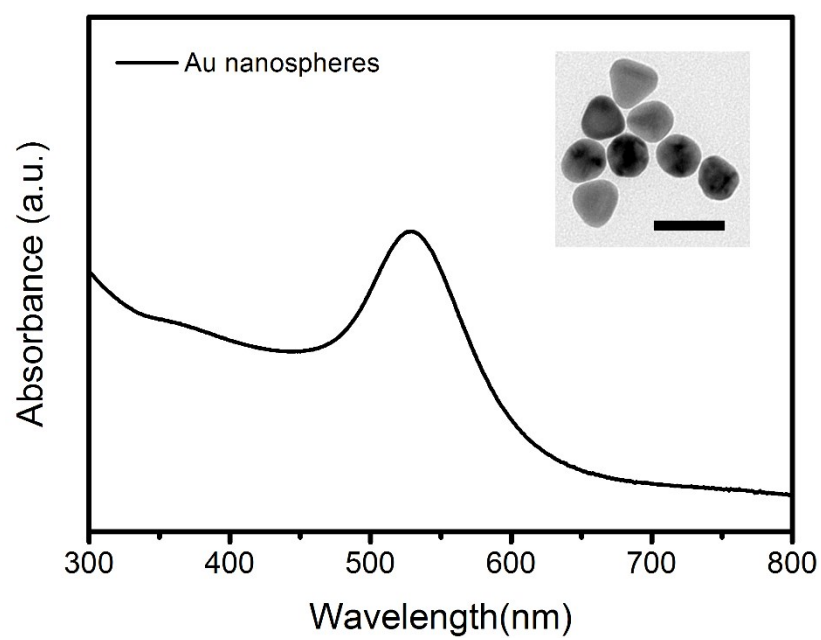


Figure S6. UV-vis spectra of Au nanospheres. The inset is the TEM image of Au nanospheres and the scale bar is 50 nm.

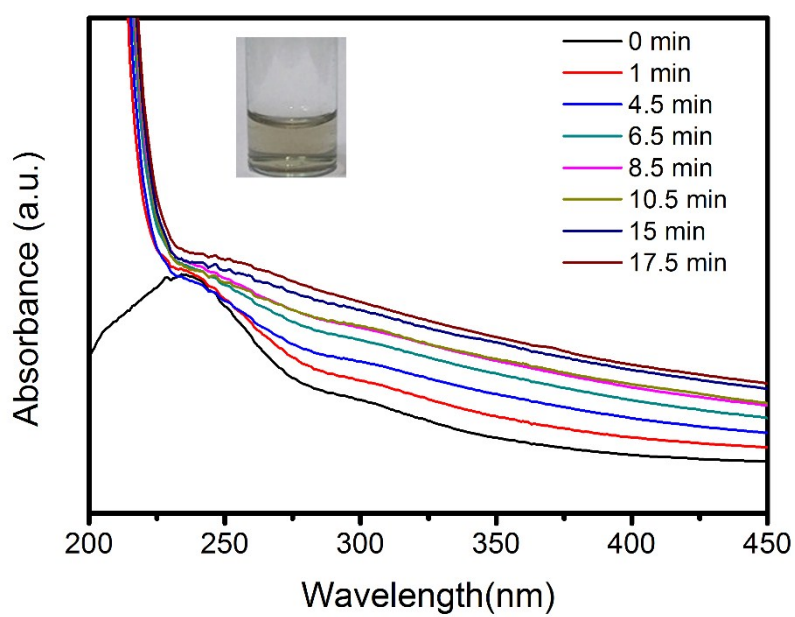


Figure S7. UV-vis spectra of the visible light assisted reduction product of GO sheets catalyzed by Au nanospheres. The inset is the image of reaction product at 2 h.

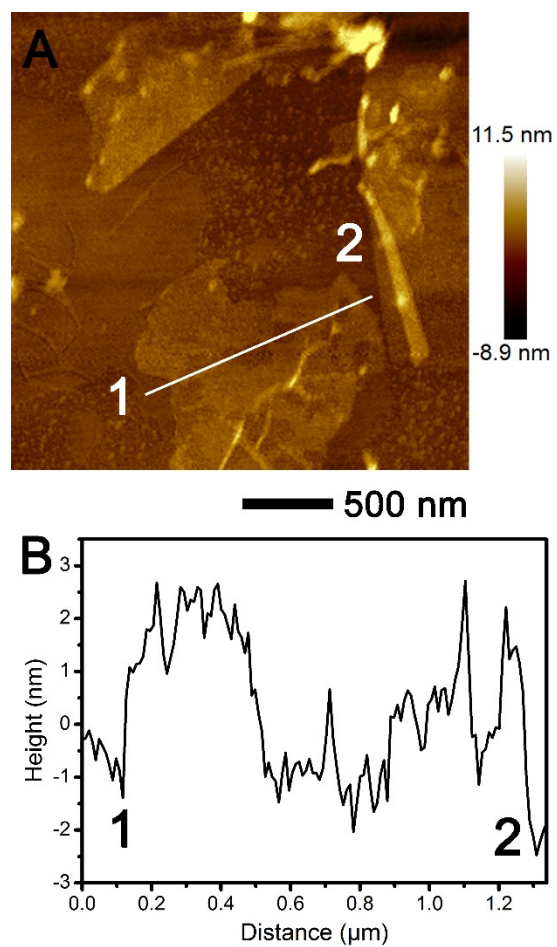


Figure S8. (A) AFM image of final reducing product. (B) AFM profile along the while line from 1 to 2 in (A)

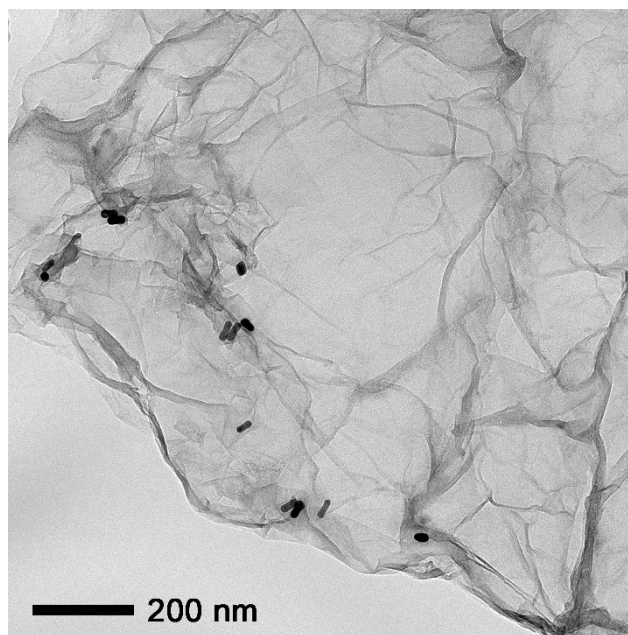


Figure S9. TEM image of the final product of reducing reaction.