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Highly stable Au/Pd @mesoporous SiO₂ yolk-shell hetero-nanostructures
for plasmon-enhanced visible light driven catalytic reaction

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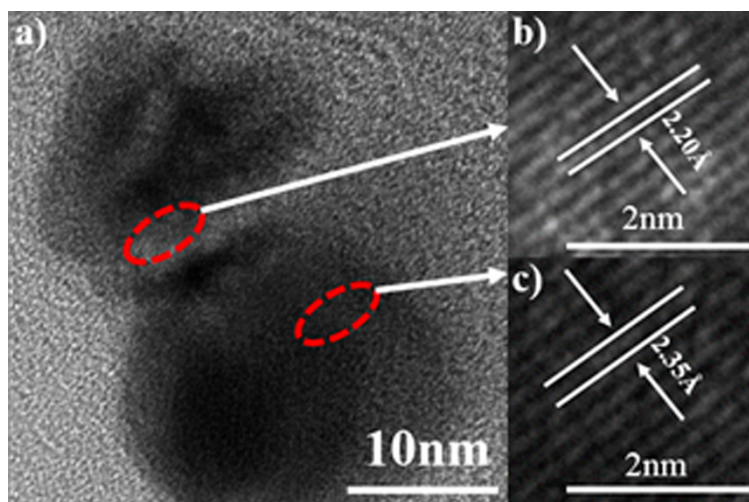


Figure S1. (a) High resolution TEM images of Au/Pd@m-SiO₂ yolk-shell particle, (b) and (c) enlarge image of the square region in (a).

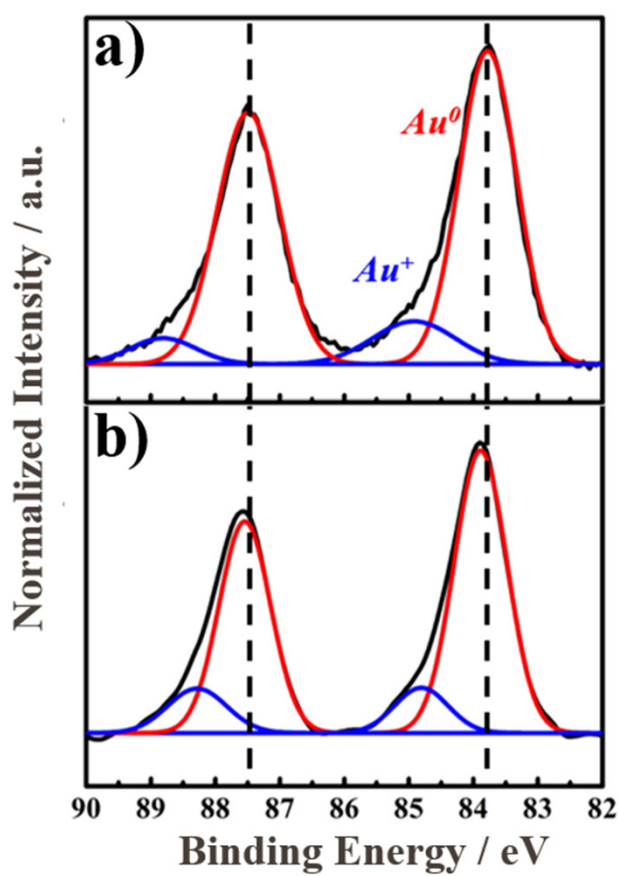


Figure S2. The XPS spectra of Au 4f of Au@m-SiO₂ and Au/Pd@m-SiO₂.

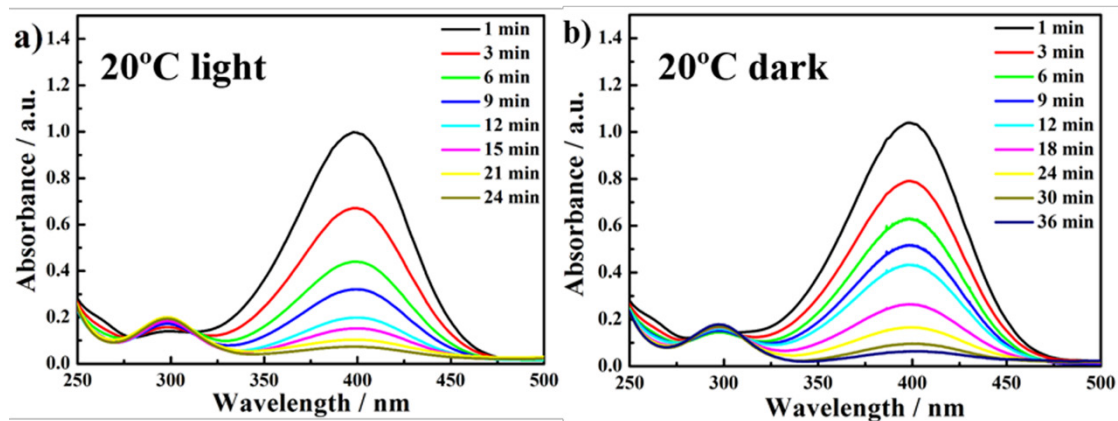


Figure S3. Time dependent UV-vis absorption spectra of the reduction of 4-nitrophenol by NaBH_4 in the presence of Au/Pd@m-SiO_2 yolk shell NPs at 5°C .

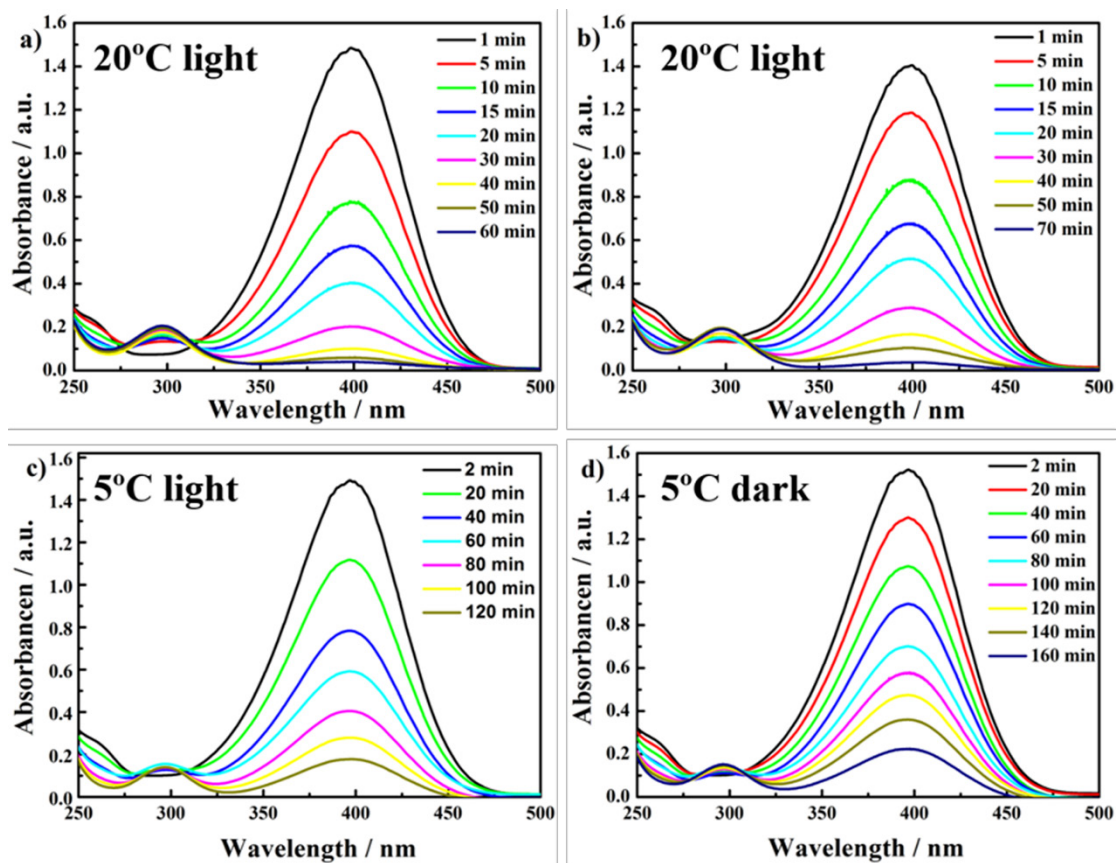


Figure S4. Time dependent UV-vis absorption spectra of the reduction of 4-nitrophenol by NaBH_4 in the presence of Au@m-SiO_2 yolk-shell NPs at various conditions.

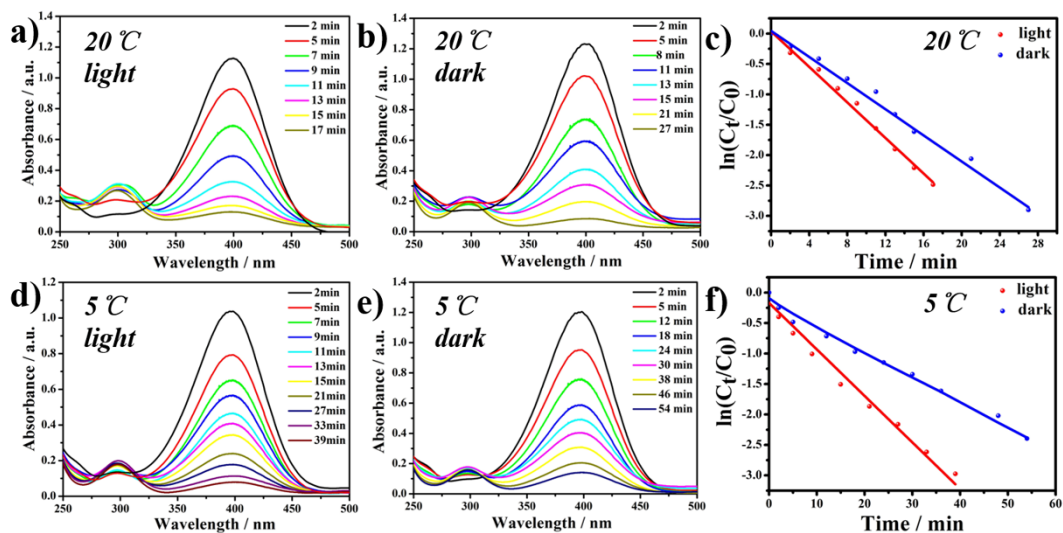


Figure S5. Time dependent UV-vis absorption spectra and Kinetic linear fitting curves for the reduction of 4-NP by NaBH_4 in the presence of Au/Pd without m-SiO_2 NPs at various conditions.

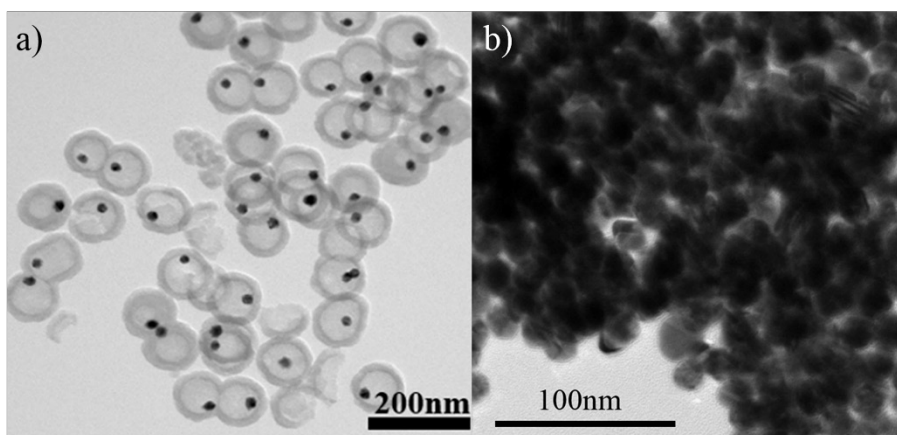


Figure S6. TEM images of a) Au/Pd@m-SiO₂ yolk-shell NPs after 10 cycles and b) Au/Pd without m-SiO₂ after 3 cycles.