

Supporting Information

Au nanoparticle-embedded SiO₂-Au@SiO₂ catalysts with improved catalytic activity, enhanced stability to metal sintering and excellent recyclability

Uiseok Jeong¹, Ji Bong Joo^{2}, Younghun Kim^{1*}*

*¹Department of Chemical Engineering, Kwangwoon University, Seoul, 139-701, Republic of
Korea*

*²Low Carbon Process Lab, Korea Institute of Energy Research, Deajeon, 305-343, Republic
of Korea*

*Corresponding authors (Tel: +82-42-860-3019, E-mail: jbjoo@kier.re.kr, Tel: +82-2-940-
5768, E-mail: korea1@kw.ac.kr)

Contents

- **Figure. S1-4.**

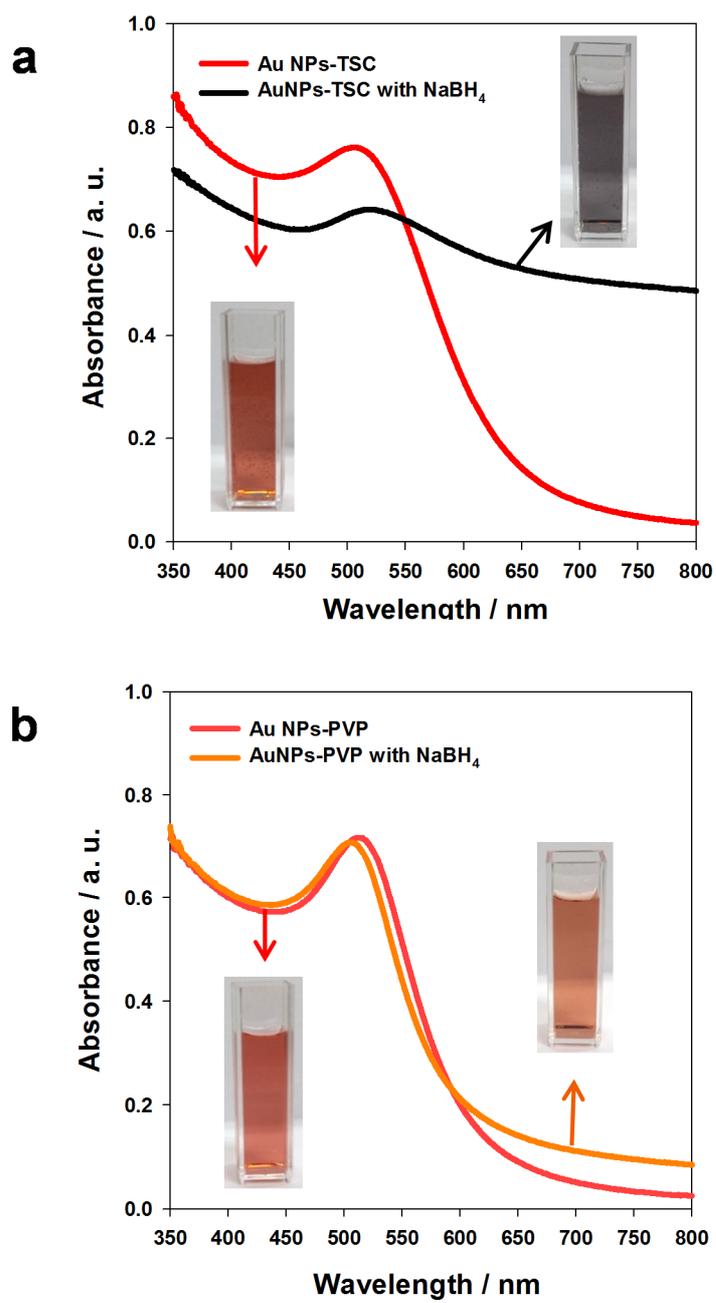


Figure S1. UV-Vis spectra changes and corresponding digital photo images of Au NP solutions by adding NaBH₄ solution: (a) Au NPs-TSC and (b) Au NPs-PVP

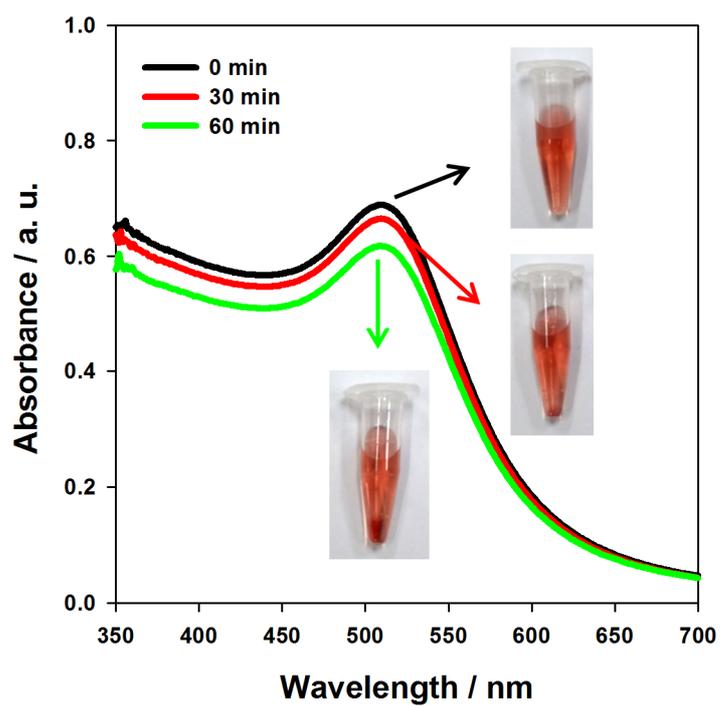


Figure S2. UV-Vis spectra changes and corresponding digital photo images of Au NPs-PVP sample after centrifugation at 13000 rpm with different periods.

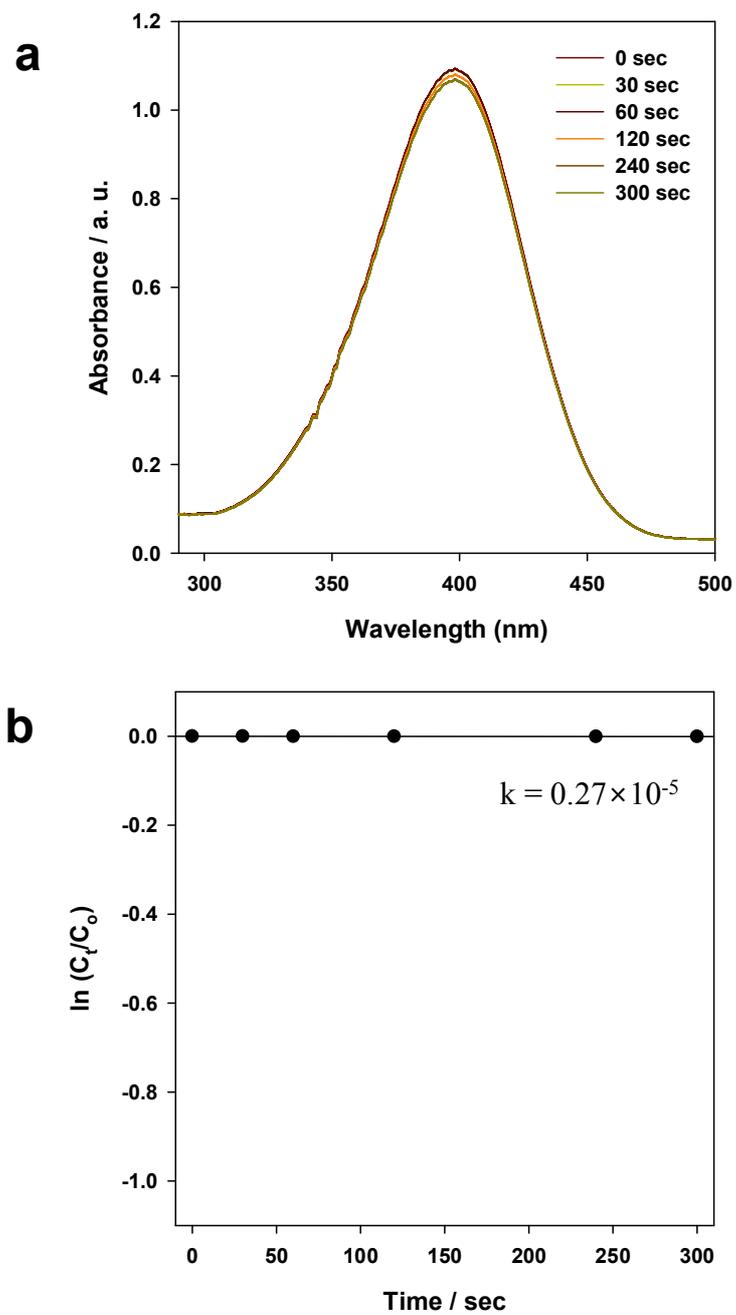


Figure S3. (a) UV-vis absorption spectra changes and (c) semi-logarithmic plot versus time on 4-NP degradation in the presence of Silica

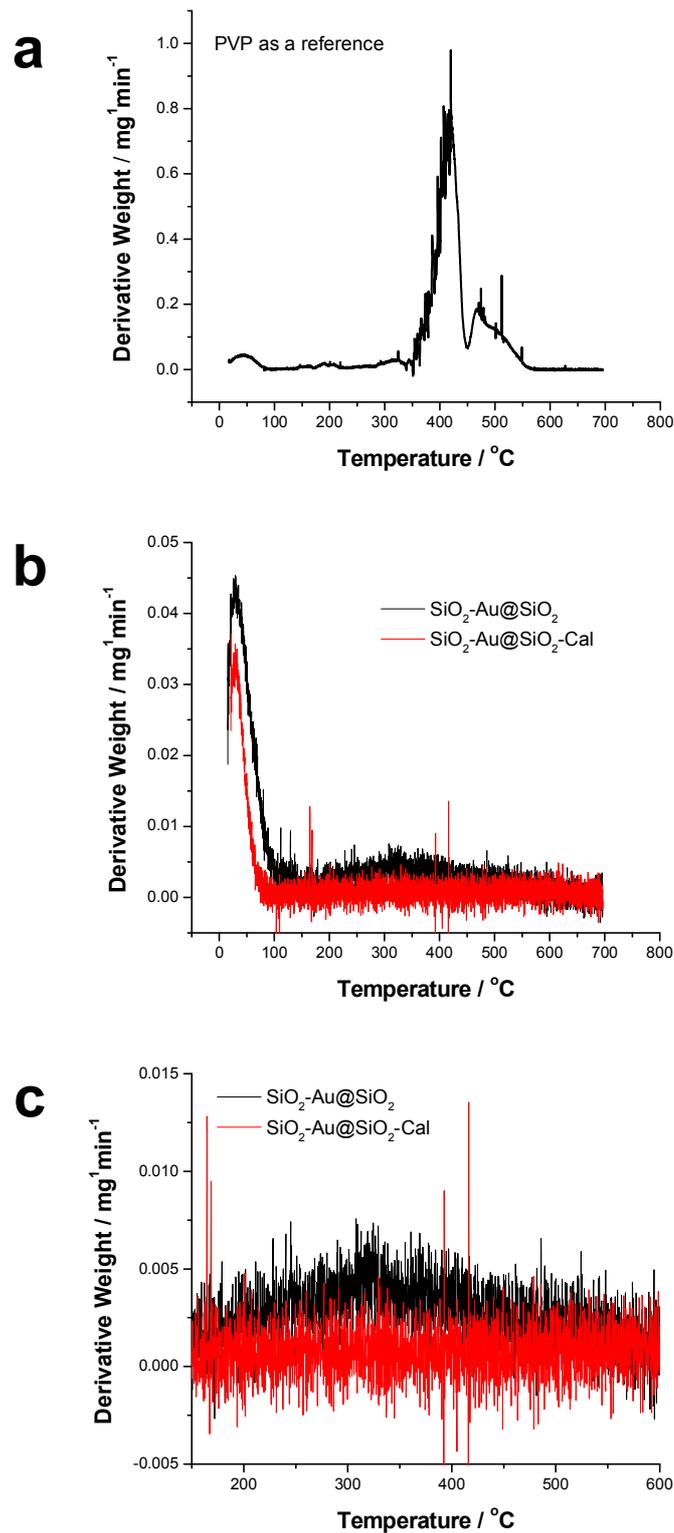


Figure S4. Derivative weight loss curves: (a) PVP polymer, (b-c) SiO₂-Au@SiO₂ and SiO₂-Au@SiO₂-Cal. (c) is the expanded regions of 200 ~ 500 °C indicating that SiO₂-Au@SiO₂ sample shows broad distribution curve with small peak. It means that small amount of embedded PVP should be burned out.