

Supporting Information

The Effects of Au Species and Surfactant of Au@SiO₂ on Catalytic Reduction of 4-Nitrophenol

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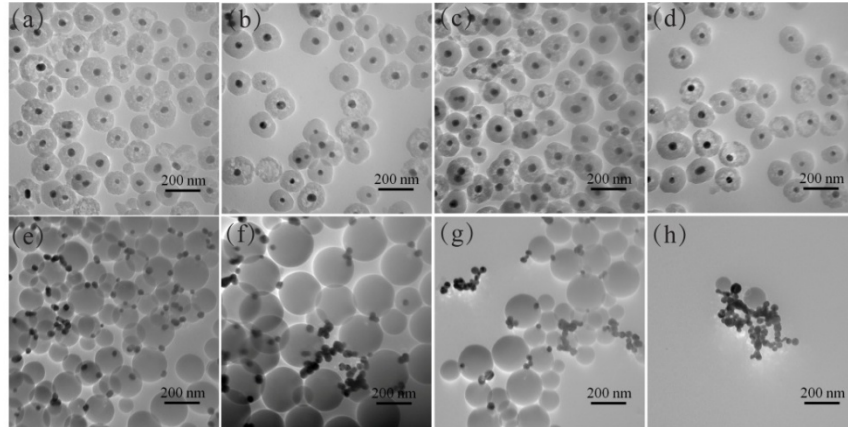


Fig. S1 TEM images of Au@pSiO₂ and Au/SiO₂ annealed at different temperature (a, e) without annealing, (b, f) 350 °C, (c, g) 500 °C, and (d, h) 700 °C.

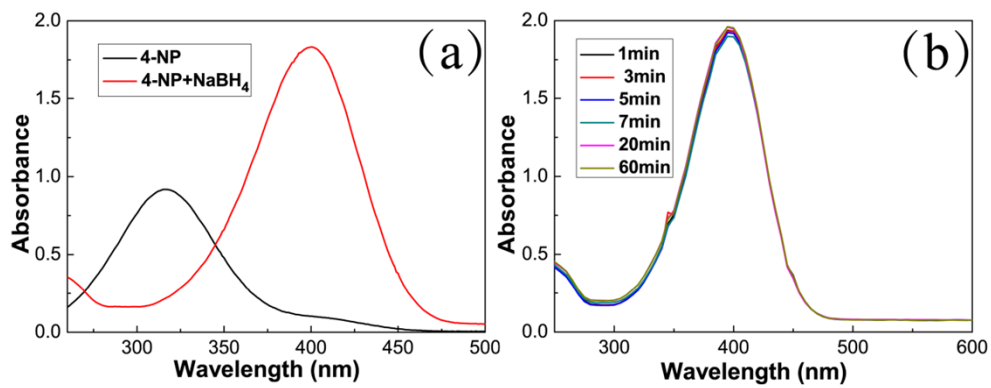


Fig. S2 (a) UV-Vis spectra of 4-NP with and without NaBH₄, (b) Time-dependent UV-Vis spectra for reduction of 4-NP with NaBH₄.

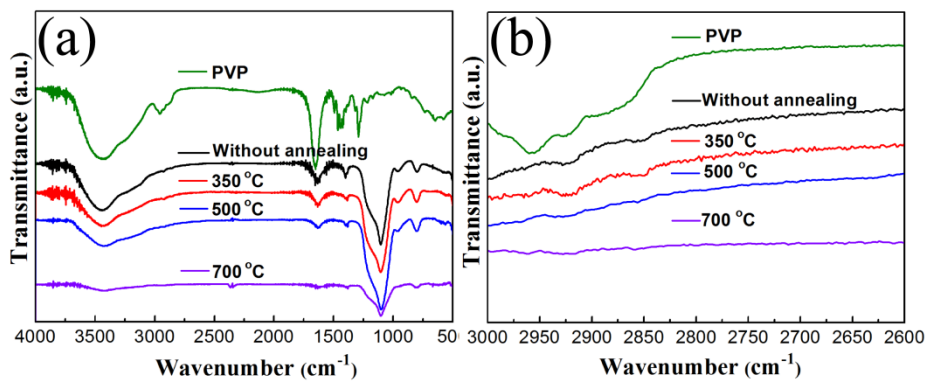


Fig. S3 (a) FTIR spectra of Au@pSiO₂ annealed at different temperature, (b) the magnification figure.

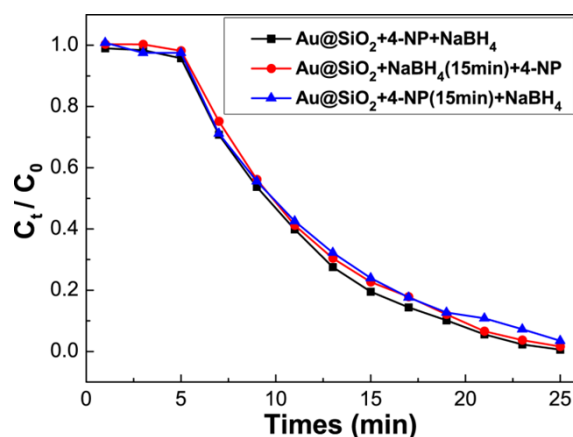


Fig. S4 Time-dependent conversion curves of 4-NP when Au@pSiO₂ was mixed with 4-NP or NaBH₄ for 15 min beforehand.

Table S1 Recent studies on the reduction of 4-NP over Au-containing nanocatalysts

Catalyst	size of	Initial concentration of 4-NP (10 ⁻⁴ mol/L)	k per Au content (10 ⁻³ s ⁻¹ μmol Au ⁻¹)	Ref.
	Au (nm)			
polyelectrolyte/Au	40	0.52	0.22	1
graphene/Au	15	0.93	26	2
polyelectrolyte/Au	14	0.52	2.0	1
Au@Air@mSiO ₂	10	0.55	3.6	3
flower-like Au@Fe ₃ O ₄	10	1.8	3.3	4
dumbbell-like Au-Fe ₃ O ₄	5	1.8	5.4	4
polymer/Au	4	0.61	2.3	5
Au@pSiO ₂	30	1.0	14	This work

Table S2 Comparison of Au 4f XPS data of Au@pSiO₂ annealed at different temperature.

Catalysts	Au ⁰		Au ⁿ⁺		Au ⁿ⁺ /Au ⁰
	Peak	content	Peak	content	
Untreated-Au@pSiO ₂	83.9, 87.6	0.47	84.7, 88.4	0.53	1.14
350-Au@pSiO ₂	83.7, 87.4	0.57	84.3, 88.0	0.43	0.75
500-Au@pSiO ₂	83.8, 87.5	0.64	84.5, 88.2	0.36	0.56
700-Au@pSiO ₂	83.6, 87.3	0.71	84.2, 87.9	0.29	0.41

References

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