

Catalytic Activity of Bare and Porous Palladium Nanostructures in the Reduction of 4-Nitrophenol

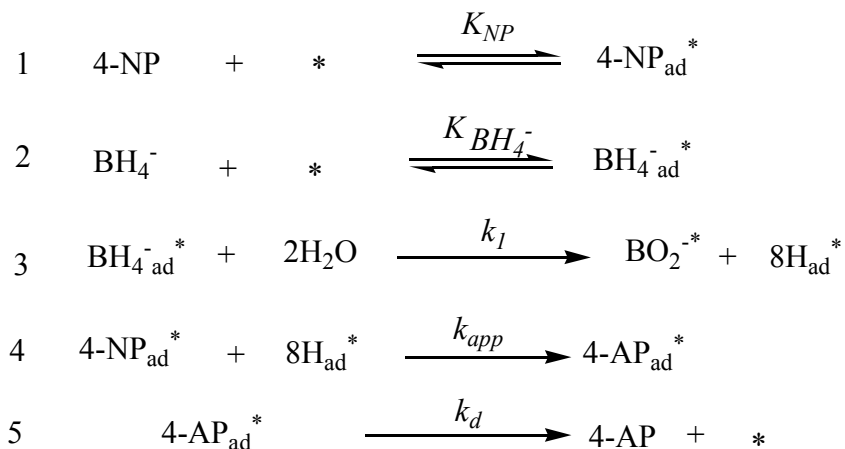
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Electronic Supplementary Information:



Scheme 1: Reduction of 4-NP at the surface of PdNBs. The asterisk (*) indicates the active site of PdNBs.

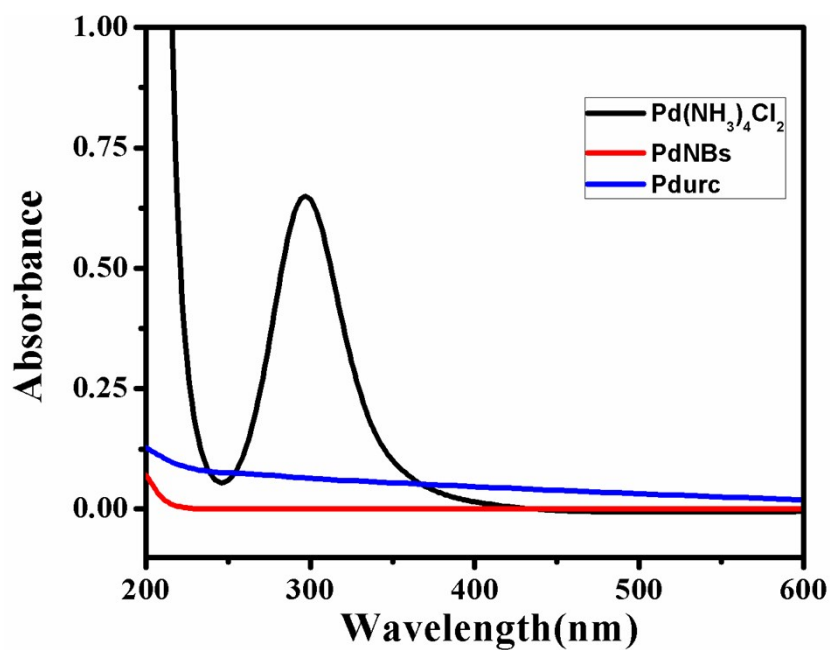


Fig. 1S. UV-VIS absorption spectra of Pd(NH₃)₄Cl₂, a palladium metal precursor (black line), synthesized PdNBs (red line) and Pdurc (blue line) after 80 kGy γ irradiation.

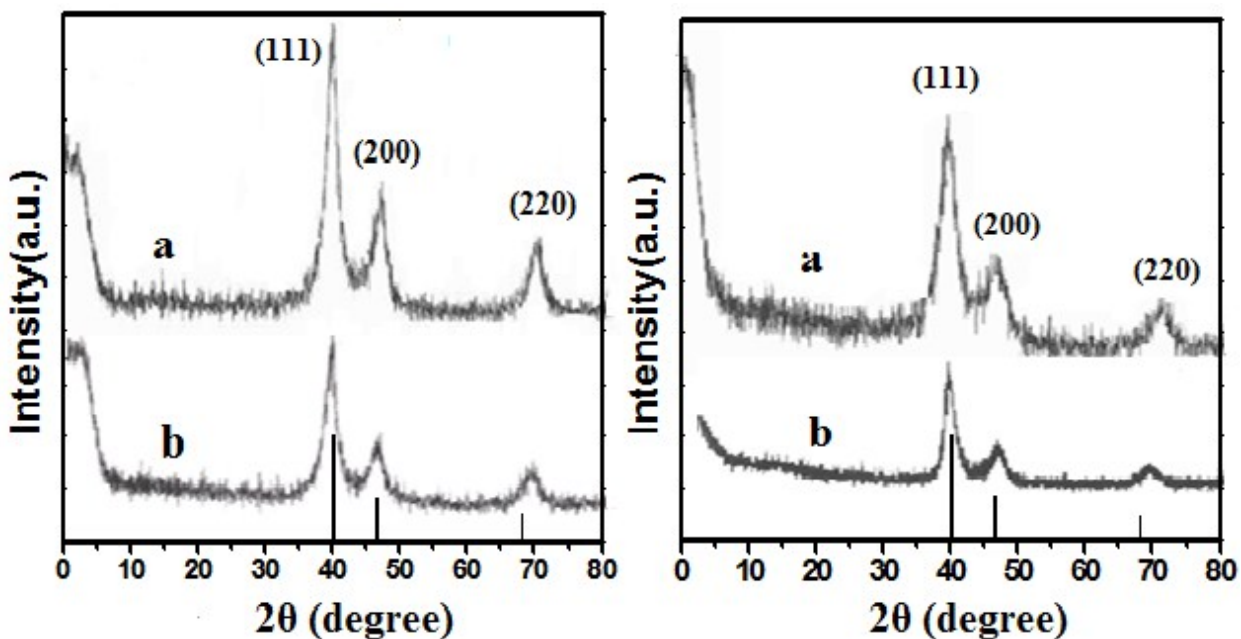


Fig. 2S. XRD pattern (left panel) of a) PdNBs, b) Pdurc synthesized in SLCs before 4-NP reduction reaction. Right panel is the XRD pattern of a) PdNBs, b) Pdurc after 4-NP reduction reaction indicates polycrystallinity doesn't affect.

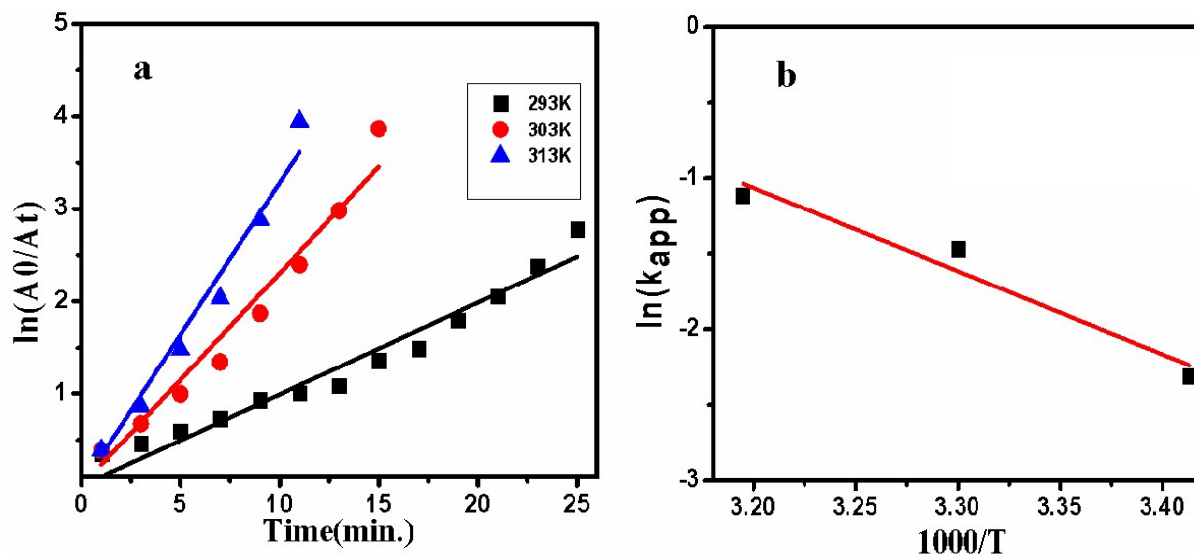


Fig. 3S. Temperature dependent reduction reaction of 4-NP to 4-AP by NaBH_4 ; a) in the presence of PdNBs; b) The corresponding Arrhenius plot of $\ln(k_{app})$ against $1000/T$. Reaction conditions: $[4\text{-NP}] = 1 \times 10^{-4}$ M; $[\text{NaBH}_4] = 5 \times 10^{-2}$ M; $[\text{PdNBs}] = 0.166$ mg/L; scan time = 2 minutes.

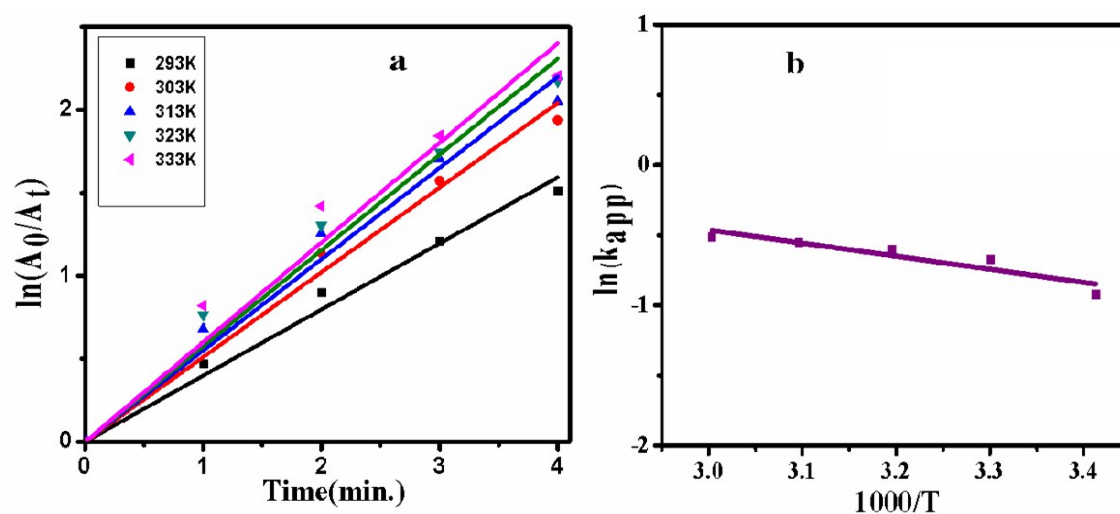


Fig. 4S. Temperature dependent reduction reaction of 4-NP by NaBH_4 ; a) in the presence of Pdurc; b) The corresponding Arrhenius plot of $\ln(k_{app})$ against $1000/T$. Reaction conditions: $[4\text{-NP}] = 1 \times 10^{-4}$ M; $[\text{NaBH}_4] = 5 \times 10^{-2}$ M; $[\text{Pdurc}] = 1.66$ mg/L; scan time = 1 minute.