

Supporting Information

**Supporting Palladium Metal on Gold Nanoparticles Improves Its  
Catalysis for Nitrite Reduction**

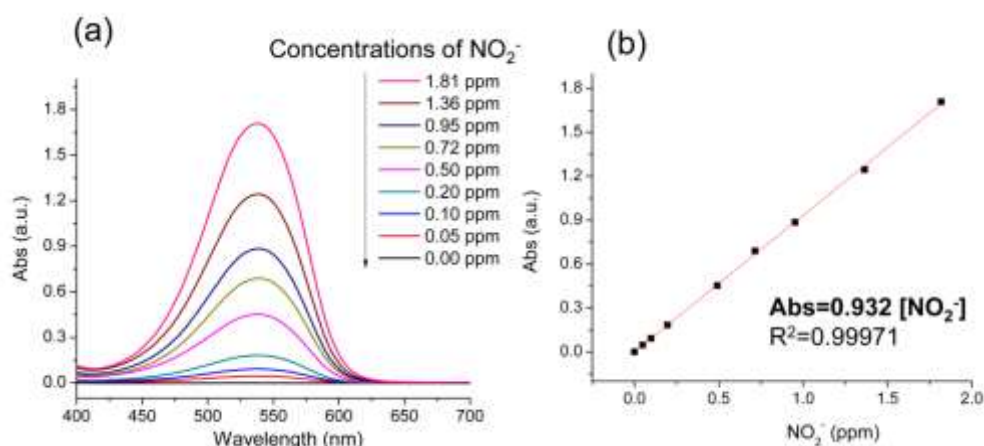
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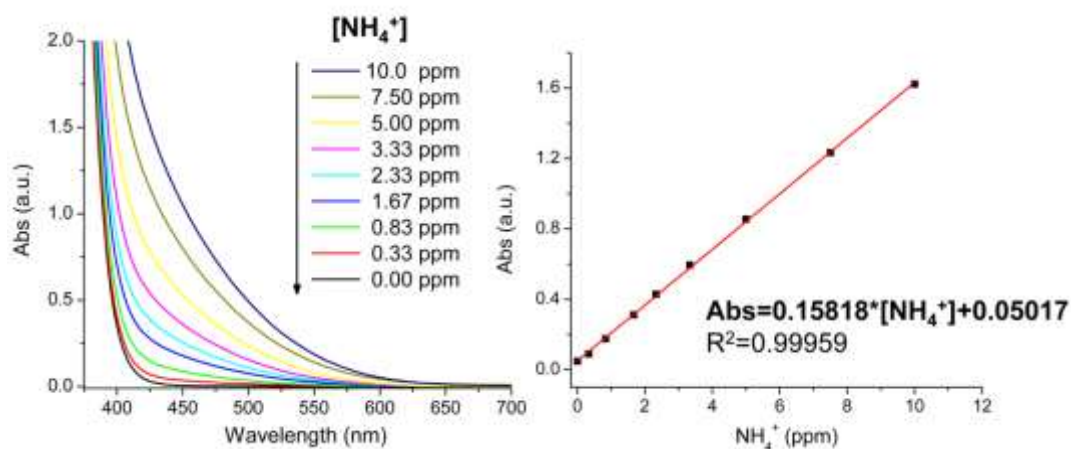
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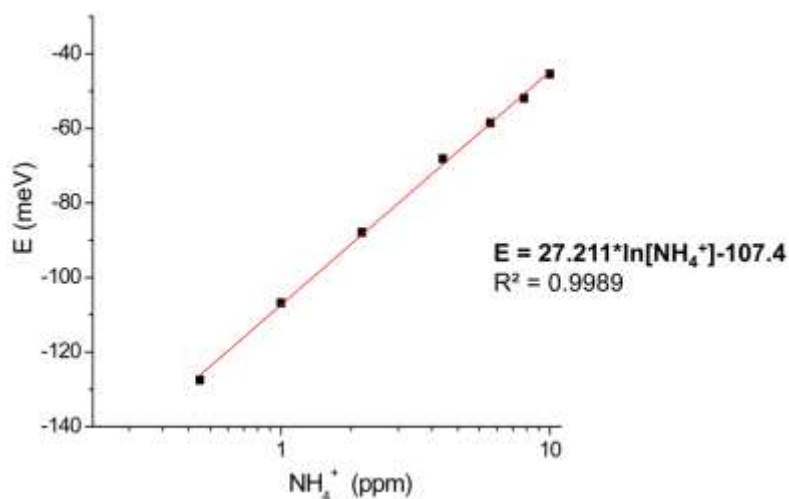
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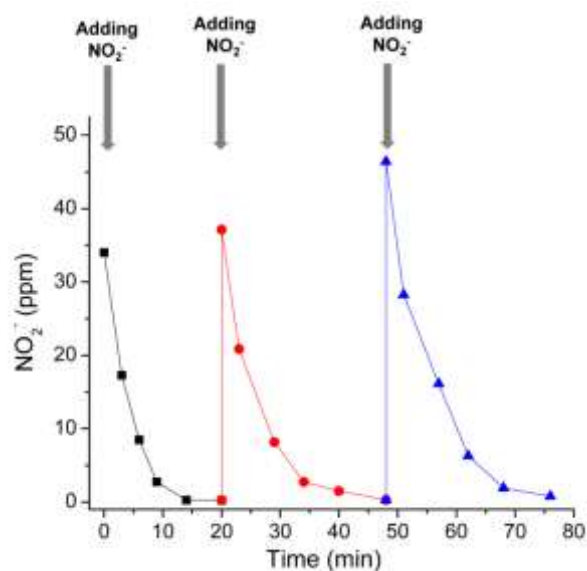
**Figure S1.** (a) UV-Vis absorption spectra of Griess's reagent reacted with various concentration of nitrite. (b) Standard curve of nitrite concentration (x-axis) against absorbance at 540 nm (y-axis).



**Figure S2.** (a) UV-Vis absorption spectra of Nessler's reagent reacted with various concentration of  $\text{NH}_4^+$ . (b) Standard curve of concentration of  $\text{NH}_4^+$  (x-axis) against absorbance at 420 nm (y-axis).



**Figure S3.** Standard curve of ammonia concentration (x-axis) against potentials (y-axis) measured by ammonia ion selective electrode.



**Figure S4.** Nitrite concentration profile after adding additional nitrite reactant to the reactor at 20 min and at 47 min. Reaction conditions: 60 sc% Pd-on-Au NPs with 0.365 mg/L Pd in reactor, 120 mL/min  $\text{H}_2$ , 120 mL/min  $\text{CO}_2$ , 400 rpm stirring rate, 1 atm pressure.

**Table S1.** Actual volume of Pd-on-Au solution and nanopure water added to reactor

Sample name	Volume of Pd-on-Au (mL)	Volume of nanopure water (mL)
10 sc% Pd-on-Au NPs	30	69.60
30 sc% Pd-on-Au NPs	10	89.60
60 sc% Pd-on-Au NPs	5	94.60
80 sc% Pd-on-Au NPs	3.75	95.85
100 sc% Pd-on-Au NPs	3	96.60
150 sc% Pd-on-Au NPs	1.84	97.76
300 sc% Pd-on-Au NPs	0.78	98.82
Pd NPs	0.83	98.77

**Table S2.** Actual volume of 1 M NaCl solution and nanopure water added to reactor

Concentration of $\text{Cl}^-$ (mol/L)	Volume of 1M NaCl (mL)	Volume of nanopure water (mL)
0	0	99.6
0.001	0.01	99.59
0.005	0.05	99.55
0.02	0.2	99.4
0.05	0.5	99.1