

Supporting Information

Shape-Enhanced Ammonia Electro-Oxidation Property of Cubic Platinum Nanocrystals Catalyst Made by Surfactant-Free Synthesis

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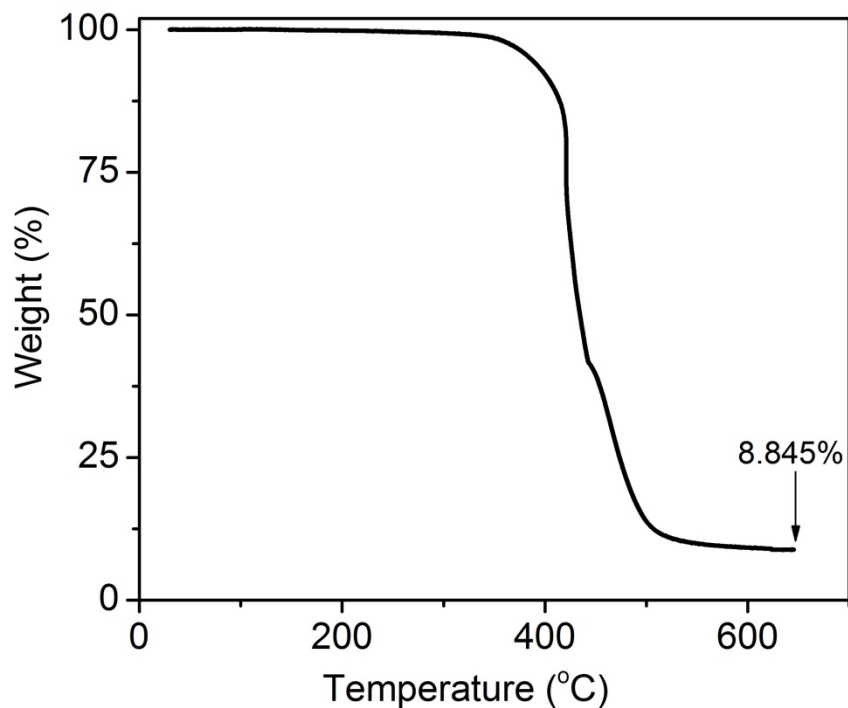


Figure S1. Thermal gravity analysis of the PtNCs/C sample by heating the samples at 10°C /min to 650 °C in a flow of air (60 cm²/min).

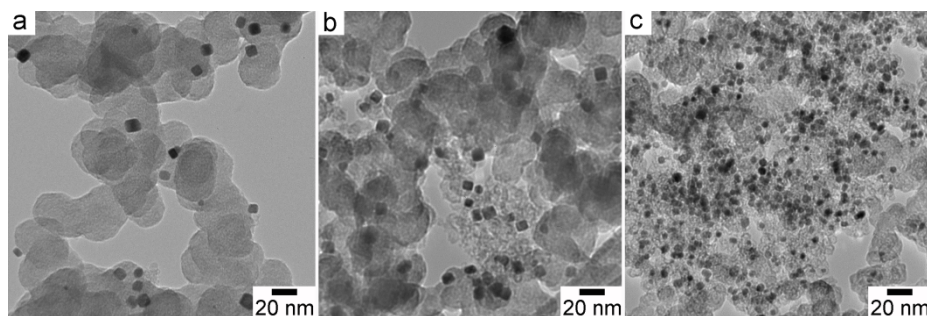


Figure S2. TEM of prepared Pt/C using carbon support which was pre-treated at different temperatures: (a) 250 °C, (b) 350 °C, and (c) 400 °C. Pt reduction condition: H₂/CO = 5/120 cm³/min, T = 200°C, and t = 1 h.

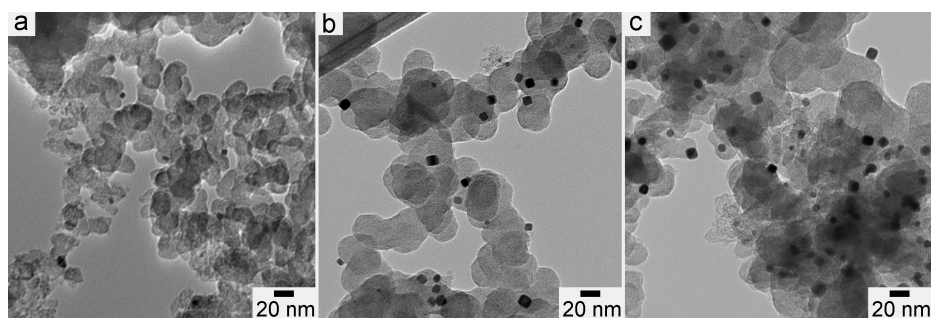


Figure S3. TEM of Pt/C samples produced at (a) 150 °C, (b) 250 °C, and (c) 300 °C. Pt reduction condition: $\text{H}_2/\text{CO} = 5/120 \text{ cm}^3/\text{min}$, and $t = 1 \text{ h}$.

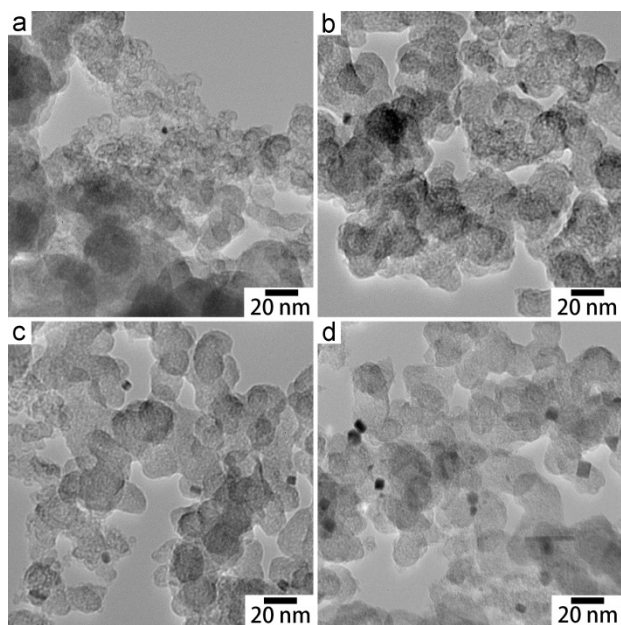


Figure S4. TEM images of Pt/C samples obtained after (a) 10 min, (b) 30 min, (c) 60 min, (d) 180 min of reduction at 150 °C in $5/120 \text{ cm}^3/\text{min}$ H_2/CO .

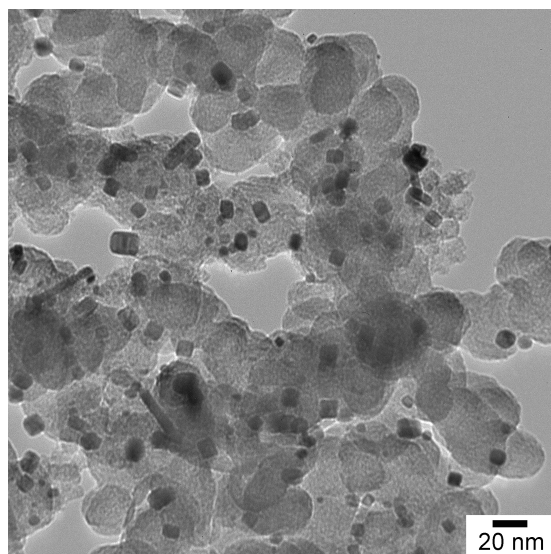


Figure S5. TEM of produced PtNCs/C containing 20 wt.% Pt. Pt reduction condition: $\text{H}_2/\text{CO} = 5/120 \text{ cm}^3/\text{min}$, $T = 200^\circ\text{C}$, and $t = 1 \text{ h}$.

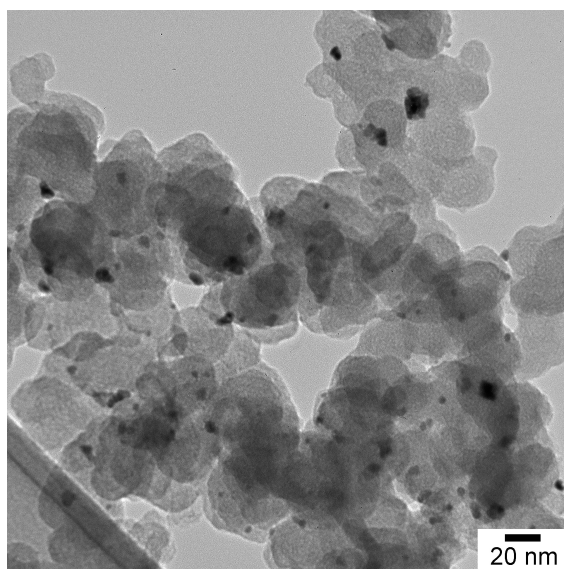


Figure S6. TEM of the commercial Pt/C.

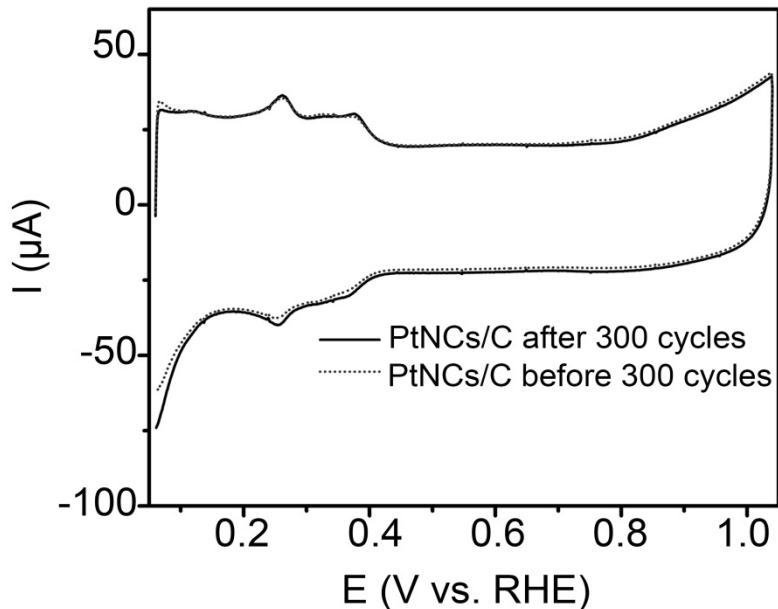


Figure S7. Comparison of cyclic voltammograms of PtNCs/C collected before and after the 300-cycle rapid scan treatment at 100 V/s in 0.5 M H_2SO_4 .

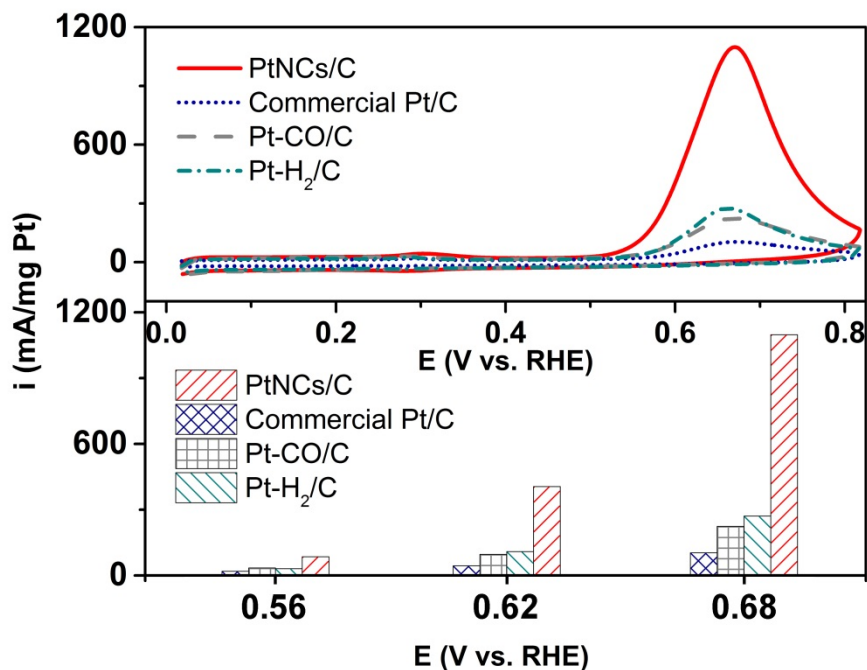


Figure S8. Cyclic voltammograms of PtNCs/C, Pt-CO/C, Pt-H₂/C, and commercial Pt/C normalized by Pt mass. Electrolyte: 0.1 M NH_3 + 1 M KOH; Potential scan rate: 50 mV/s; Electrode rotating rate: 1600 rpm.

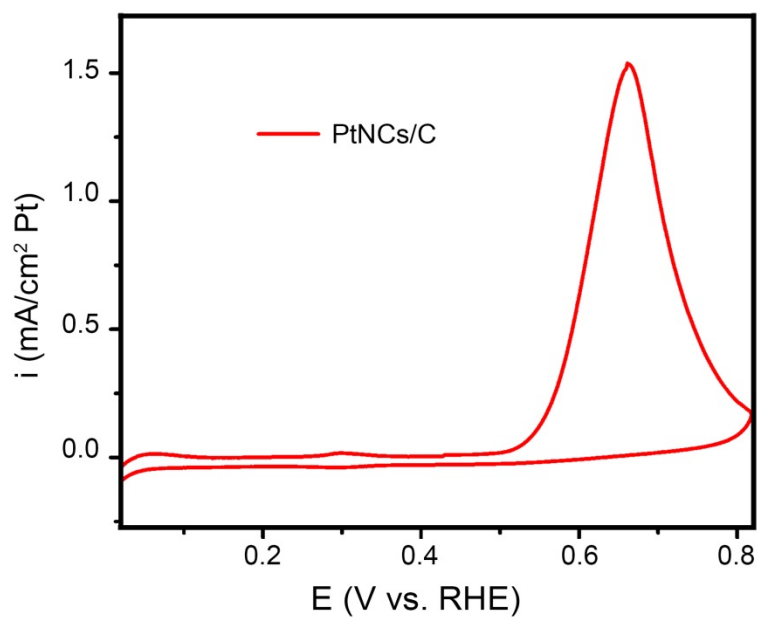


Figure S9. Cyclic voltammetry of PtNCs/C normalized by Pt electrochemically active surface area. Electrolyte: 0.1 M NH_3 + 1 M KOH; Potential scan rate: 10 mV/s; Electrode rotating rate: 1600 rpm.