Supplementary Materials

Trimetallic Pd@Pt_xAu_{1-x} Core-Shell Nanocubes with Enhanced Selectivity toward H_2O_2 for the Oxygen Reduction Reaction

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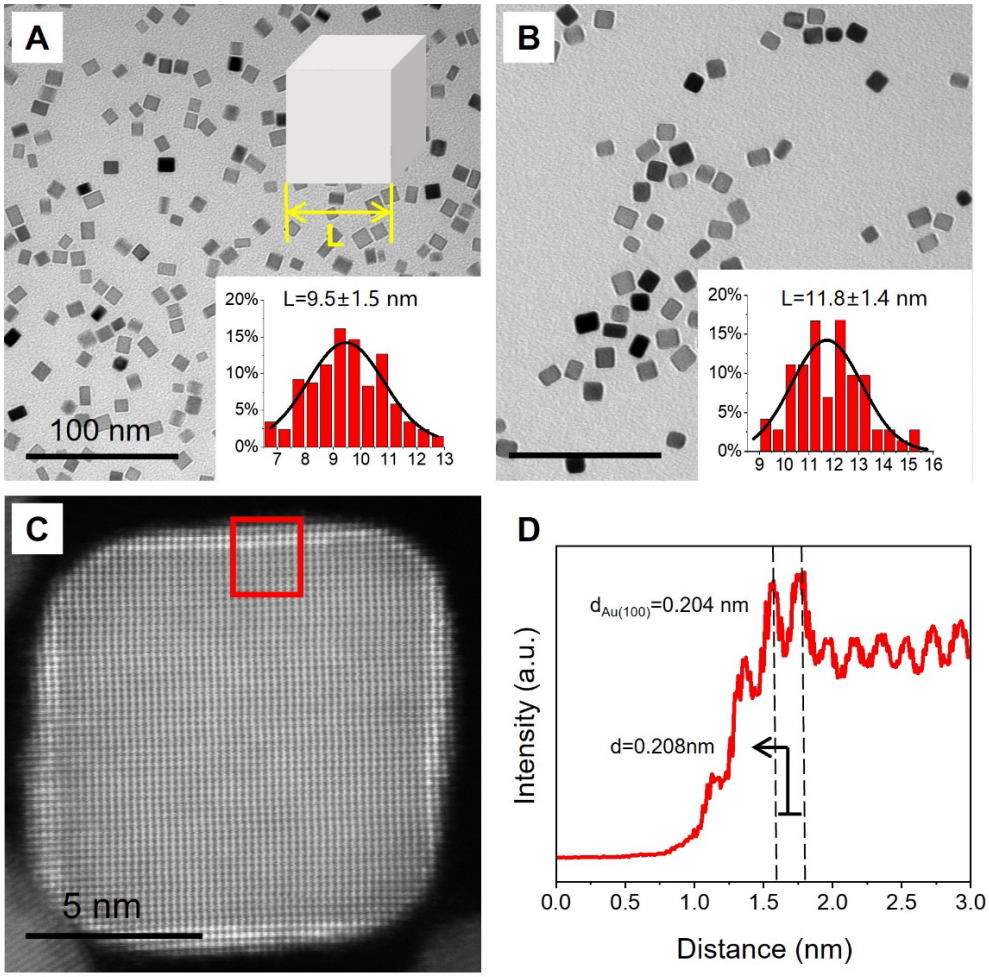

Figure S1. Synthesis of Pd and Pd@Au core-shell nanocubes. (**A**) TEM image of Pd nanocubes (together with size distribution in the inset); (**B**) TEM image of Pd@Au nanocubes (together with size distribution in the inset); (**C**) STEM image of a Pd@Au core-shell nanocube; and (**D**) Line scans of the Pd@Au core-shell nanocubes in the region of red line in (**C**). The scale bar in (**A**) applies to panel (**B**).

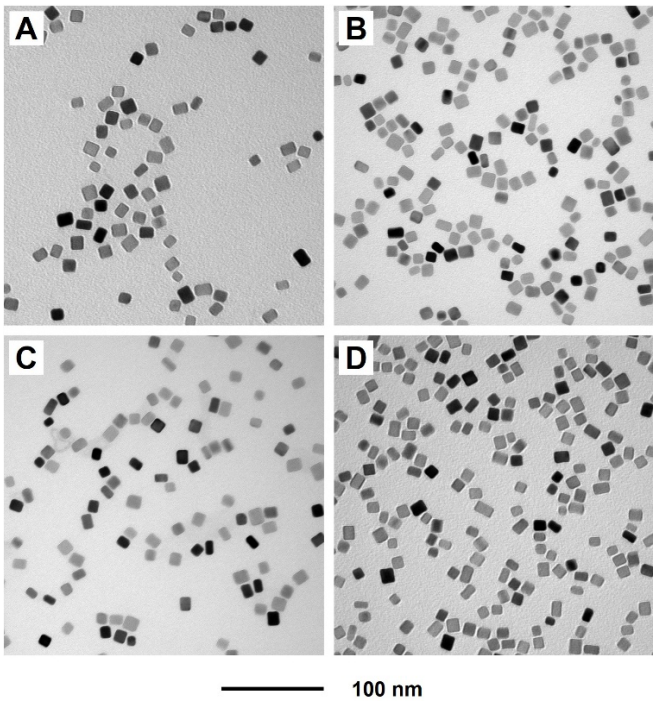

Figure S2. Variation of the feeding molar ratio between the Pt and Au precursors. TEM image of Pd@Pt_xAu_{1-x} core-shell nanocubes obtained with the Pt:Au precursor molar ratio being set to (**A**) 0:1; (**B**) 0.025:0.975; (**C**) 0.05:0.95; and (**D**) 0.1:0.9. The scale bar at the bottom applies to all panels.

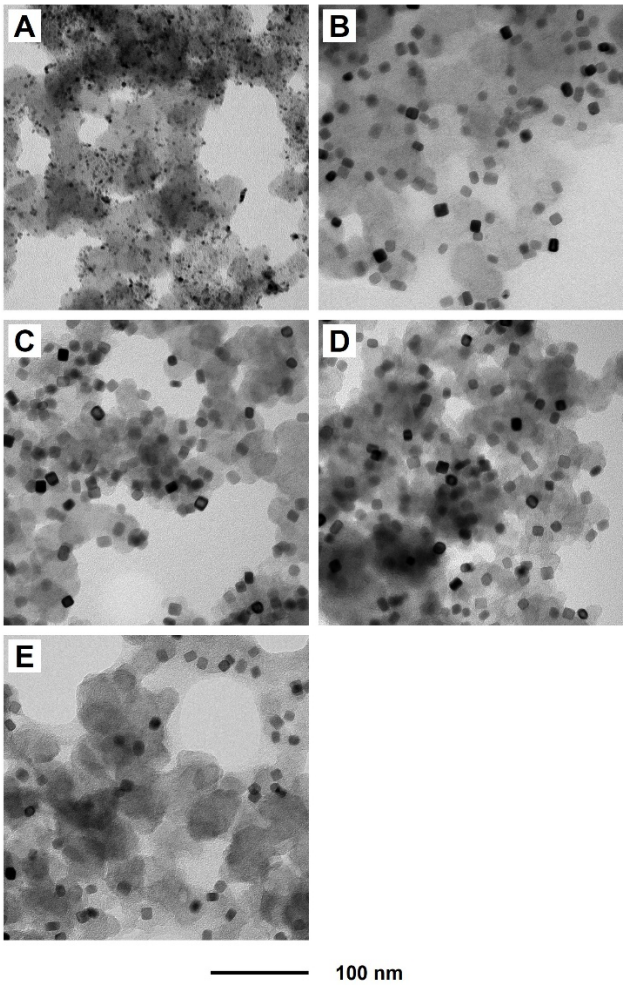

Figure S3. TEM images of (**A**) commercial Pt/C catalyst and carbon-supported Pd@Pt_xAu_{1-x} nanocubes obtained with the Pt:Au precursor molar ratio being set to (**B**) 0:1; (**C**) 0.025:0.975; (**D**) 0.05:0.95 and (**E**) 0.1:0.9. The scale bar at the bottom applies to all panels.

Table S1. The Pt:Au atomic ratio in Pd@Pt_xAu_{1-x} nanocubes as derived from ICP-MS data.

Sample	Pt:Au Atomic Ratio by ICP Data	Pt Mass Percent in the Particle (%)
Pd@Au	0:1.000	0
Pd@$Pt_{0.025}Au_{0.975}$	0.001:0.999	0.02
Pd@$Pt_{0.025}Au_{0.975}$	0.018:0.982	0.35
Pd@$Pt_{0.1}Au_{0.9}$	0.027:0.973	0.42

Table S2. Summary of the XPS peak positions (unit: eV) of Pd and core-shell nanocubes.

Sample	Pd3d5/2	Pd3d3/2	Au4f7/2	Au4f5/2	Pt4f7/2	Pt4f5/2
Pd	333.9	339.2	—	—	—	—
Pd@Au	333.9	339.2	82.4	86.1	—	—
Pd@$Pt_{0.025}Au_{0.975}$	333.7	338.9	82.2	85.9	69.6	72.8
Pd@$Pt_{0.05}Au_{0.95}$	333.5	338.8	82.0	85.7	69.4	72.9
Pd@$Pt_{0.1}Au_{0.9}$	333.4	338.7	82.0	85.6	69.7	72.8