

Supporting Information

Synergistic Effect of Bimetallic Pd-Pt Nanocrystals for the Highly Efficient Methanol Oxidation Electrocatalysts

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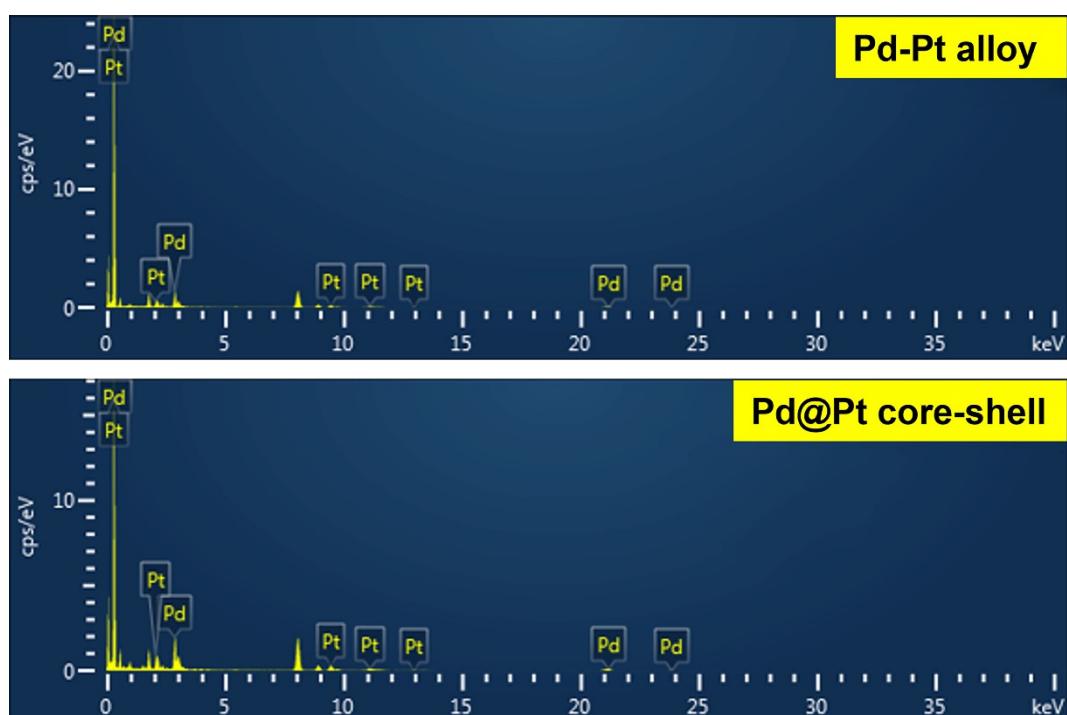


Fig. S1. EDS spectra of (a) Pd-Pt alloy and (b) Pd@Pt core-shell nanocubes.

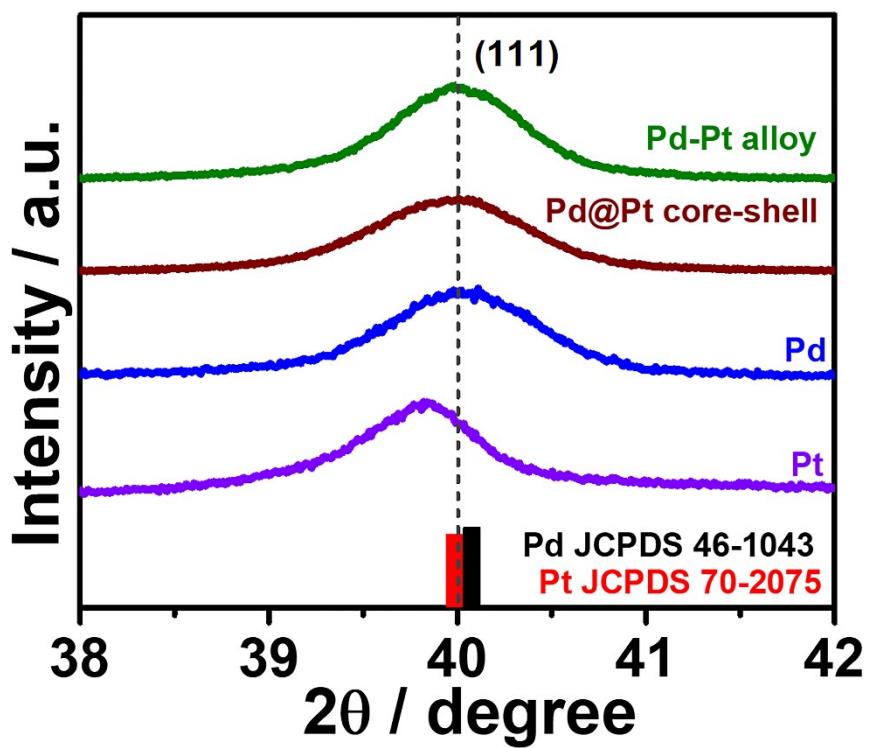


Fig. S2. The high-magnification XRD pattern of Pd-Pt alloy, Pd@Pt core-shell, Pd, and Pt nanocubes.

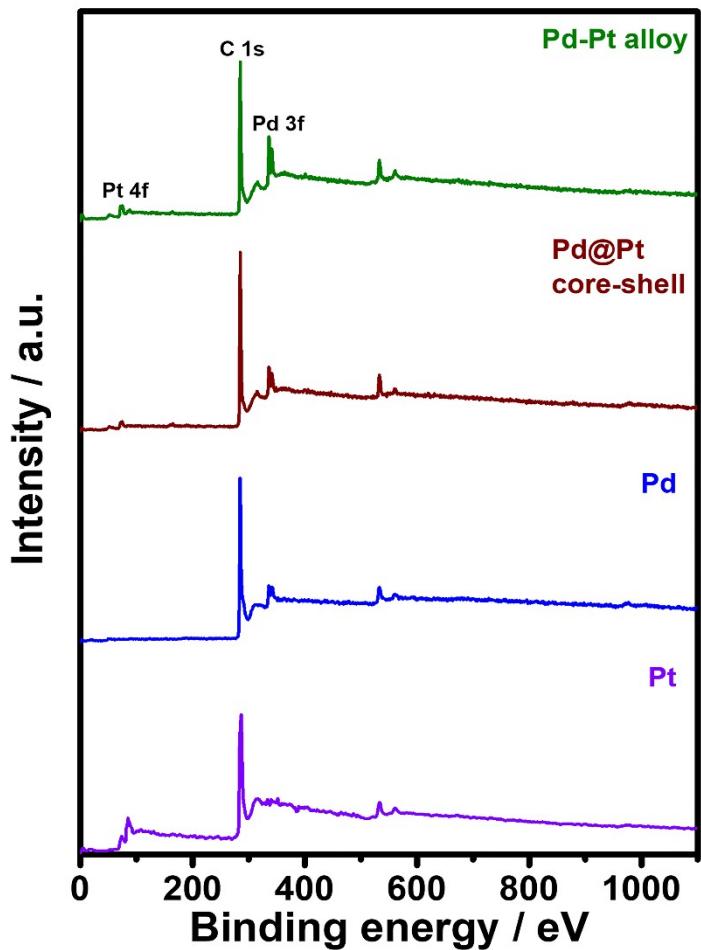


Fig. S3. The XPS survey spectra of Pd-Pt alloy, Pd@Pt core-shell, Pd, and Pt nanocubes.

Table S1. The comparison of EDS and ICP-OES results for Pd-Pt alloy and Pd@Pt core-shell nanocubes.

Catalyst	EDS Element		ICP-OES	
	Pd	Pt	Pd	Pt
Pd-Pt alloy	76.20	23.80	74.33	25.67
Pd@Pt core-shell	72.03	27.97	72.88	27.12

Table S2. Table as compared the lattice distance from XRD pattern and TEM images of different nanocubes.

Catalyst	XRD pattern	TEM image
PdPt alloy	1.95 Å	1.95 Å
Pd@Pt core-shell	1.95 Å	1.95 Å
Pd	1.94 Å	1.94 Å
Pt	1.96 Å	1.96 Å

Table S3. XPS spectra of Pt 4f core levels for nanocubes with different atomic distribution.

Catalyst	Pt 4f _{5/2}		Pt 4f _{7/2}	
	Pt ²⁺	Pt ⁰	Pt ²⁺	Pt ⁰
Pd-Pt alloy	75.51 eV	74.72 eV	71.99 eV	71.36 eV
Pd@Pt core-shell	75.52 eV	74.79 eV	71.92 eV	71.39 eV
Pt	75.55 eV	75.00 eV	72.37 eV	71.58 eV
Pd	-	-	-	-

Table S4. XPS spectra of Pd 3d core levels for nanocubes with different atomic distribution.

Catalyst	Pd 3d _{3/2}		Pd 3d _{5/2}	
	Pd ²⁺	Pd ⁰	Pd ²⁺	Pd ⁰
Pd-Pt alloy	342.90 eV	341.17 eV	336.76 eV	335.88 eV
Pd@Pt core-shell	342.57 eV	341.12 eV	336.90 eV	335.85 eV
Pd	342.18 eV	341.08 eV	336.48 eV	335.76 eV
Pt	-	-	-	-