Supporting Information

Palladium-Cobalt Nanowires Decorated with Jagged Appearance for Efficient Methanol Electrooxidation

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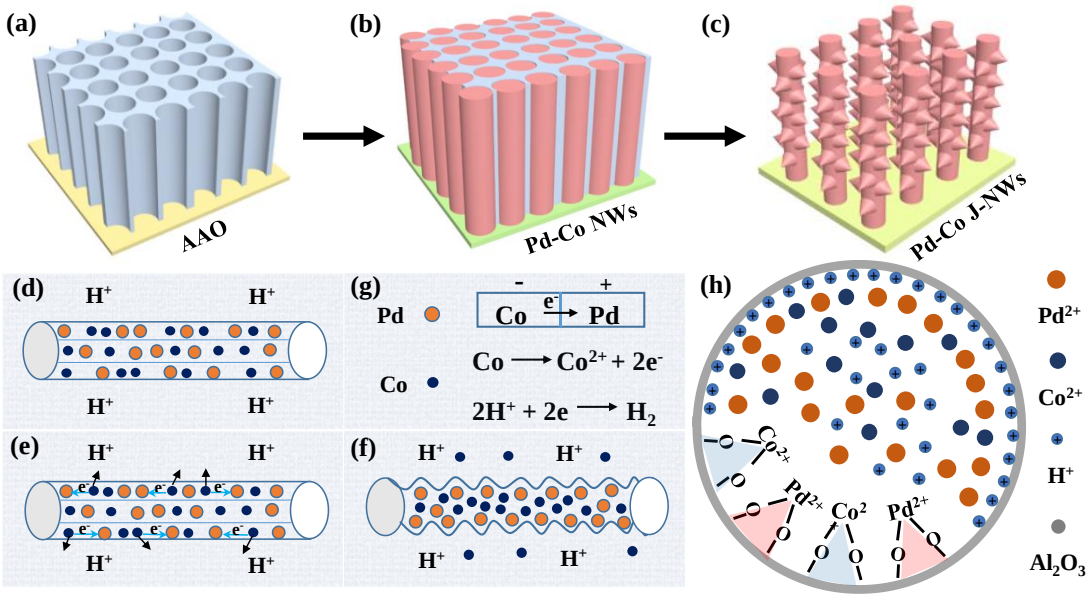
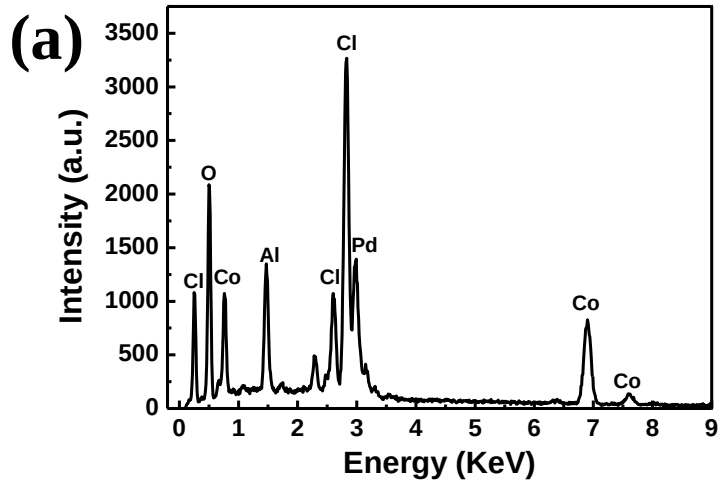
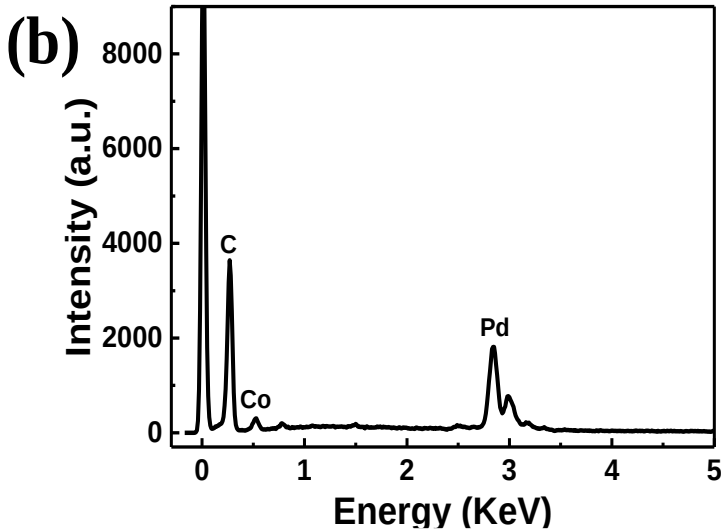


Figure S1. (a) The utilized AAO template with Au layer sputtered on either planar surface side. (b) Electrodeposition of Pd-Co R-NWs. (c) Dissolving AAO template and continuously wet-chemical modification. (d-g) The scheme of the wet-chemical process. (h) The cross-sectional scheme of the interaction between AAO nanochannels and cations.



Element	Weight %	Atomic %	Intensity	Error %	Kratio
Pd(L)	61.30	55.64	1034.35	2.06	0.27
Co(K)	38.70	44.36	375.41	3.34	0.16



Element	Weight %	Atomic %	Intensity	Error %	Kratio
Pd(L)	93.42	89.64	1914.35	1.56	0.20
Co(K)	6.58	10.36	364.48	2.34	0.14

Figure S2. (a)The EDS analysis of the Pd-Co R-NWs (from **Fig. 1**) before being etched with the Co atomic content of ~ 44.36%. (b)The EDS analysis of the Pd-Co J-NWs (from **Fig. 2**) after being etched in 10 wt% H_3PO_4 at 50 ℃ for 80 minutes with the Co atomic content of ~ 10.36%.

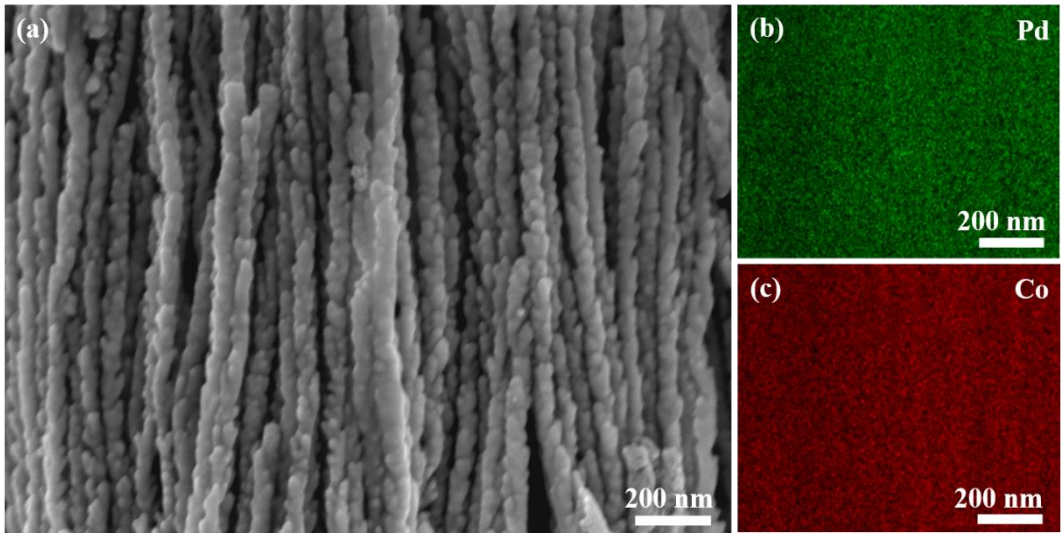


Figure S3. Large-scale synthesis of Pd-Co J-NWS with SEM characterization.(a) The SEM image of Pd-Co J-NWS in largle. (b)~(c) The elemental mappings corresponding to Pd and Co for Pd-Co J-NWS.

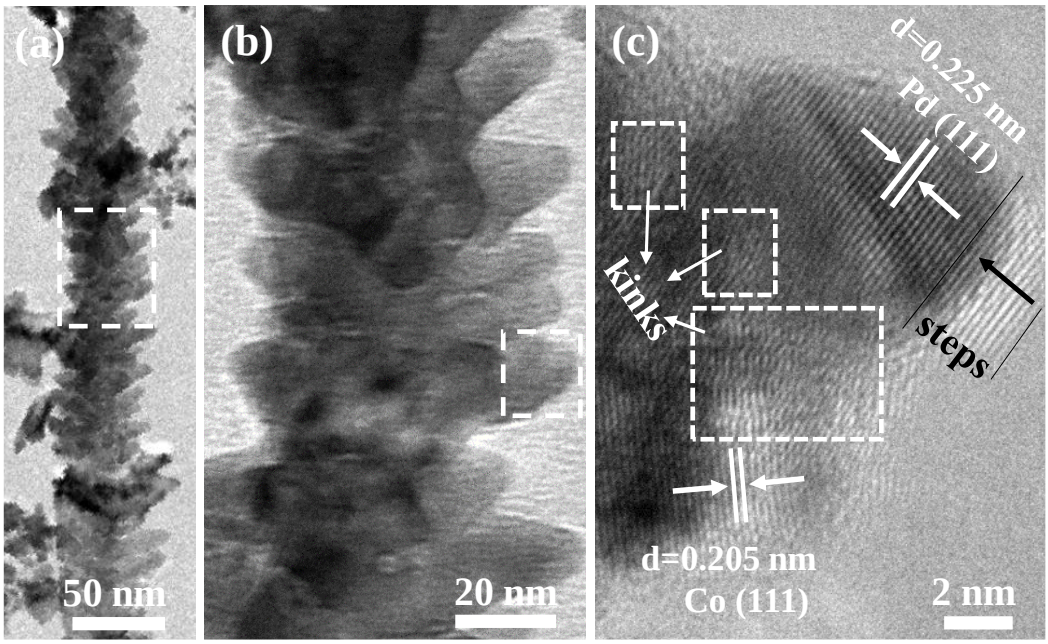
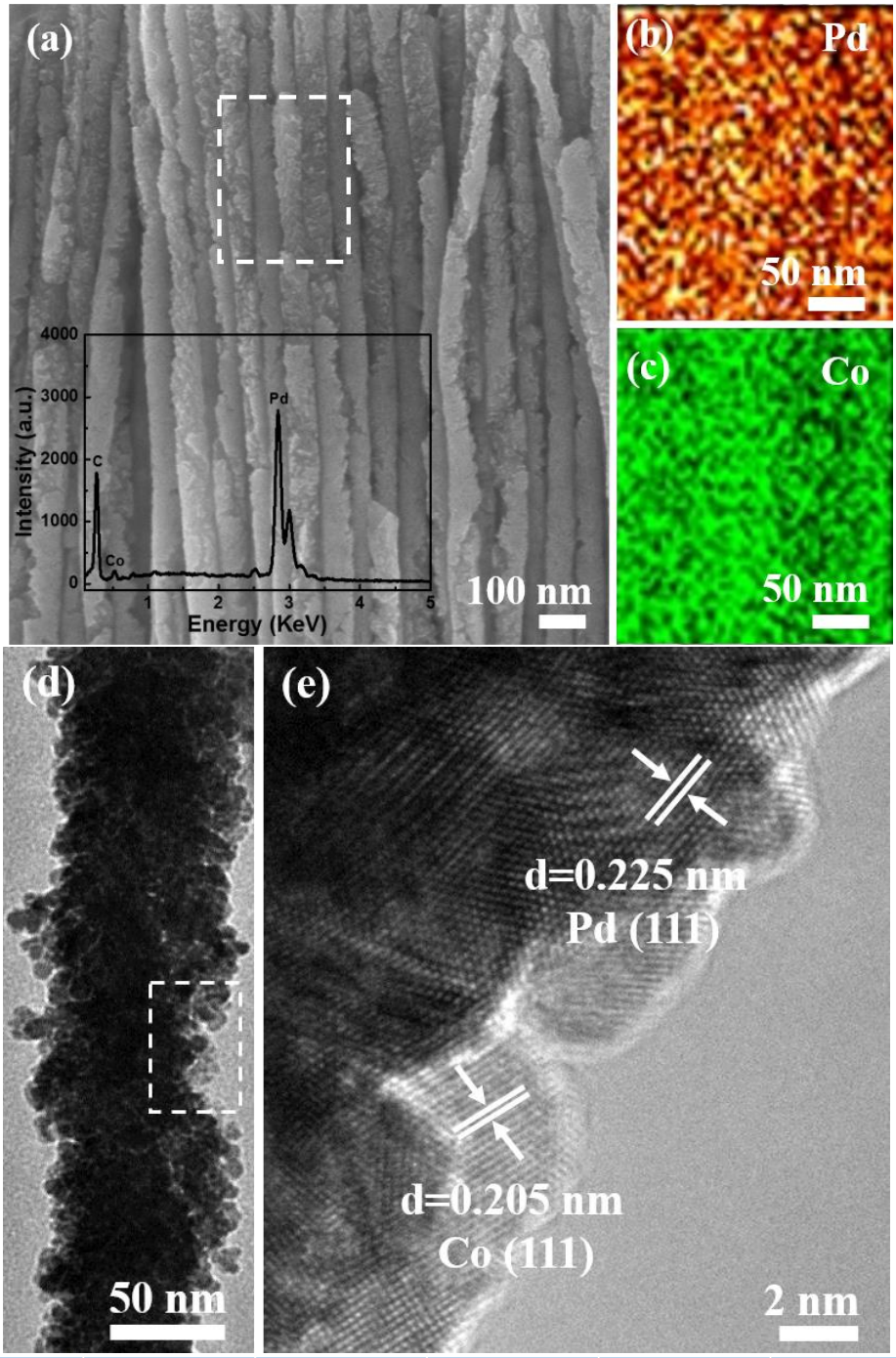


Figure S4. (a) A typical TEM image of Pd-Co J-NWs. (b) The enlarged TEM image is taken from the dashed rectangle in (a). (c) The HR-TEM image is taken from the dashed rectangle in (b).



Element	Weight %	Atomic %	Intensity	Error %	Kratio
Pd(L)	84.26	75.43	3428.75	2.72	0.17
Co(K)	15.74	24.57	275.81	3.04	0.23

Figure S5. (a) The SEM image of the Pd-Co NWs with wet-chemical modification by 10 wt% H_3PO_4 at 50 °C for 40 minutes. (b) - (c) The elemental mappings corresponding to Pd and Co. (d)-(e) The TEM and HR-TEM images of a representative Pd-Co NWs achieved after being etched under the same condition. The EDS analysis of the Pd-Co NWs with ~ 24.57%. Co

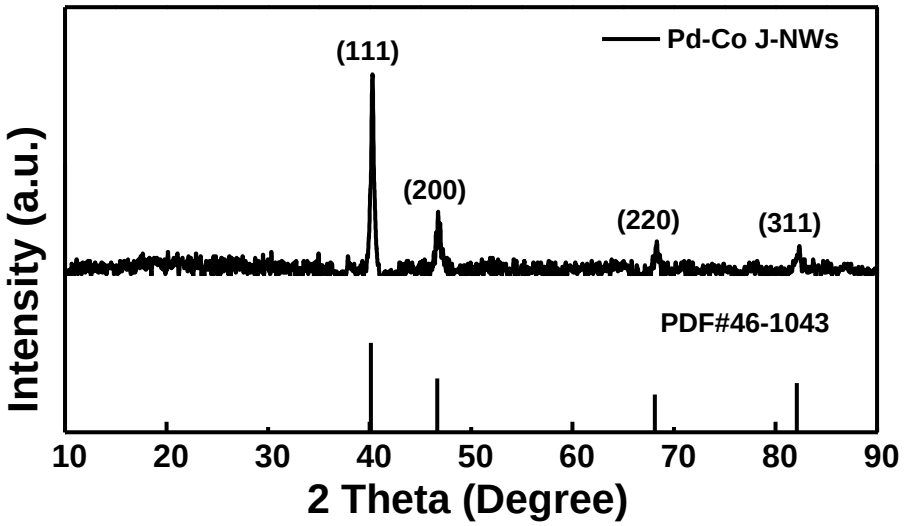


Figure S6. The XRD pattern of as-prepared Pd-Co J-NWs.

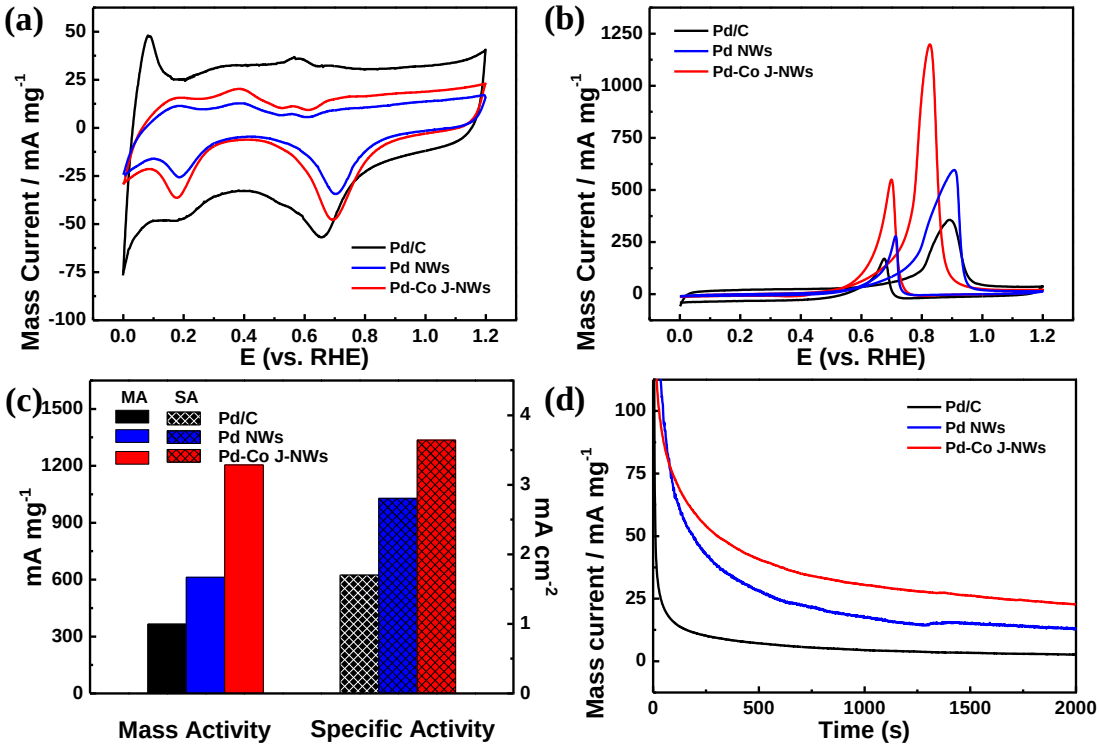


Figure S7. The electrochemical evaluation of the Pd-Co J-NWs, Pd NWs and commercial Pd/C catalysts, respectively. (a) The CVs tested in Ar-purged 1.0 M KOH solution at room temperature with the sweep rate of 50 mV s^{-1}. (b) The CVs measured in 1.0 M KOH + 1.0 M CH_3OH at 50 mV s^{-1}. (c) The summarized mass activity and specific activity. (d) The CA curves measured in 1.0 M KOH + 1.0 M CH_3OH at potential of 0.80 V for 2000 s.

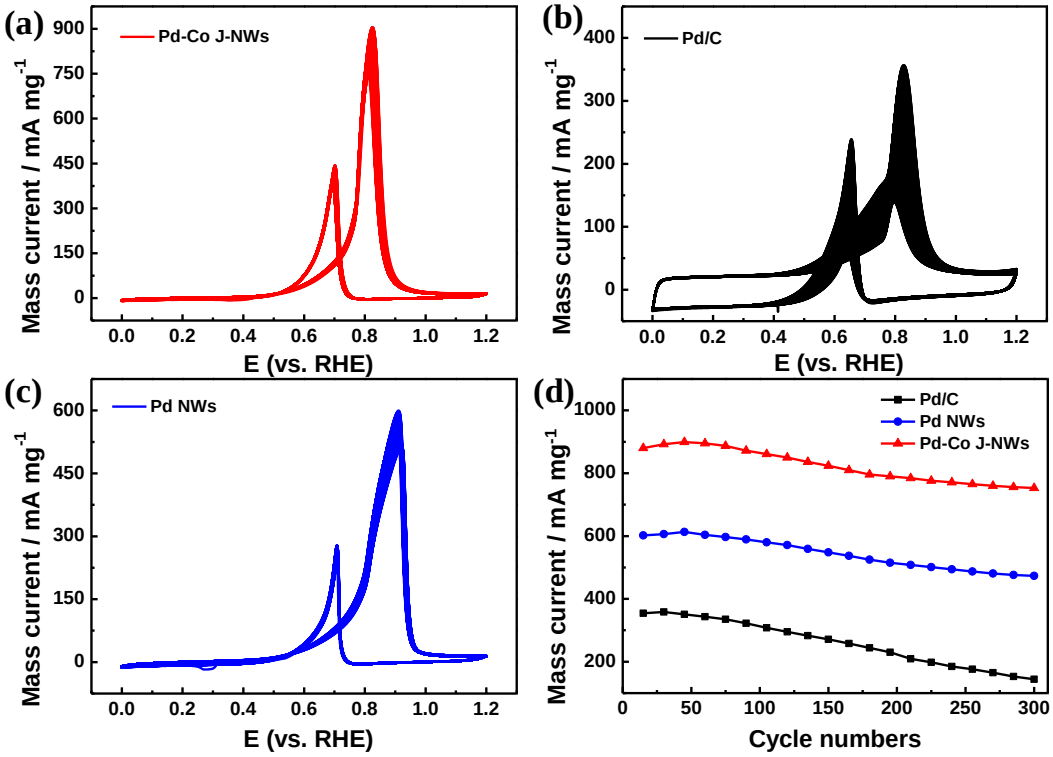


Figure S8. Multiple CVs of (a) Pd-Co J-NWs, (b) commercial Pd/C and (c) Pd NWs tested from 1st to the 300th cycle in 1.0 M KOH + 1.0 M CH_3OH at 50 mVs^{-1}, respectively. (d) The cycling stability of peak current densities of Pd-Co J-NWs, Pd NWs and commercial Pd/C with increasing cycle number.