

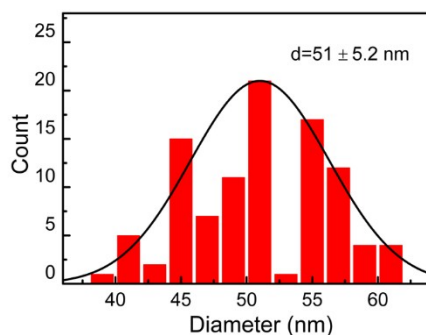
Supporting information for

Facile synthesis of wavy carbon nanowires via activation-enabled reconstruction and their applications towards nanoparticles separation and catalysis

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Fig. S1 Size distribution histogram of WCNWs.

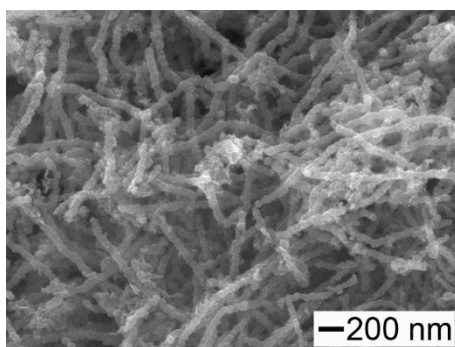


Fig. S2 SEM image of WCNWs after calcination under Ar/H₂ (95/5) flow at 1000 °C for 1 h.

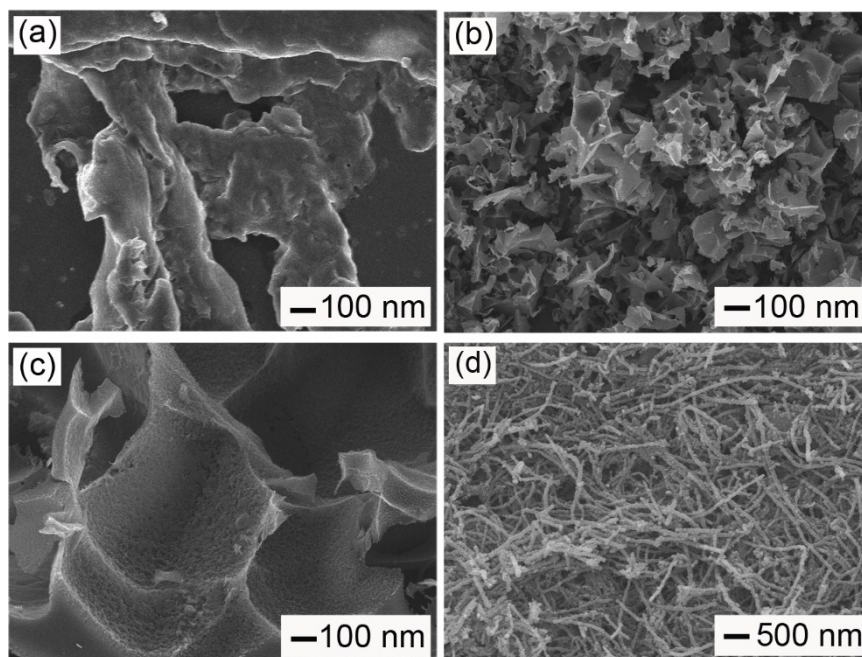


Fig. S3 Effect of KOH amount on the morphology and structure of the resultant products. SEM images of products obtained via the standard procedure, except that the mass ratio of PU: KOH was set to (a) 1:0, (b) 1:1, (c) 1:3, and (d) 1:5, respectively.

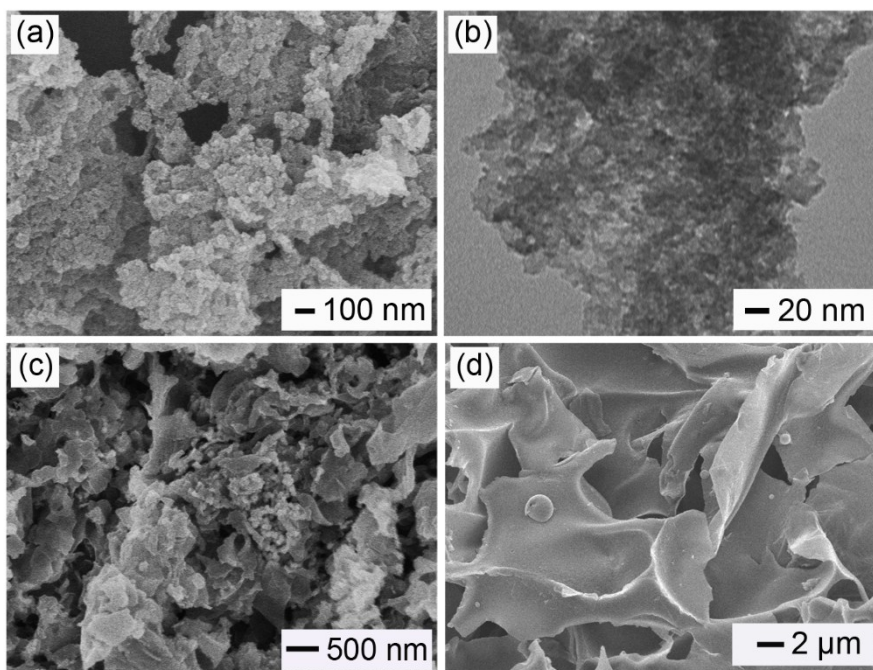


Fig. S4 (a, c, d) SEM and (b) TEM image of precursors obtained at the pre-activation temperature of (a, b) 400 °C, (c) 300 °C, and (d) 500 °C, respectively. These precursors were obtained via only the pre-activation stage, which is the thermal treatment of PU/KOH mixture (mass ratio: 1:4) at a certain pre-activation temperature for 1 h under argon protection.

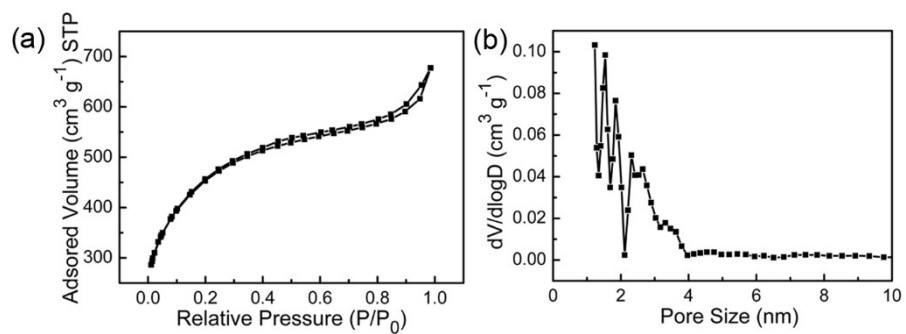


Fig. S5 (a) N₂ adsorption/desorption isotherms and (b) pore size distribution curves of the precursor obtained at the pre-activation temperature of 400 °C.

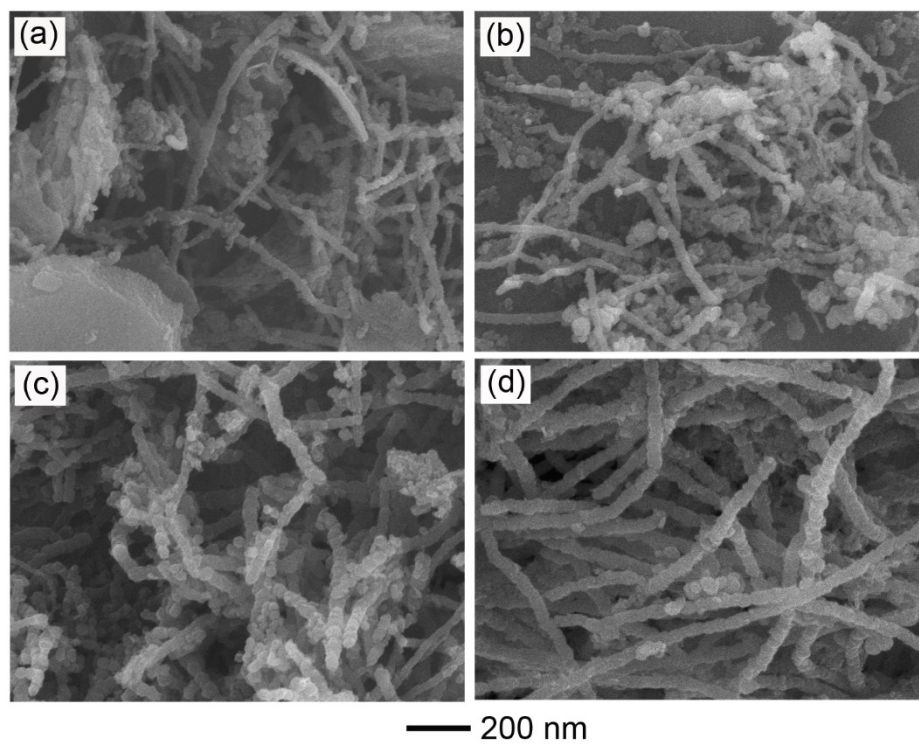


Fig. S6 SEM images of products obtained via standard process except that activation time was set to (a) 1 min, (b) 10 min, (c) 30 min and (d) 40 min.

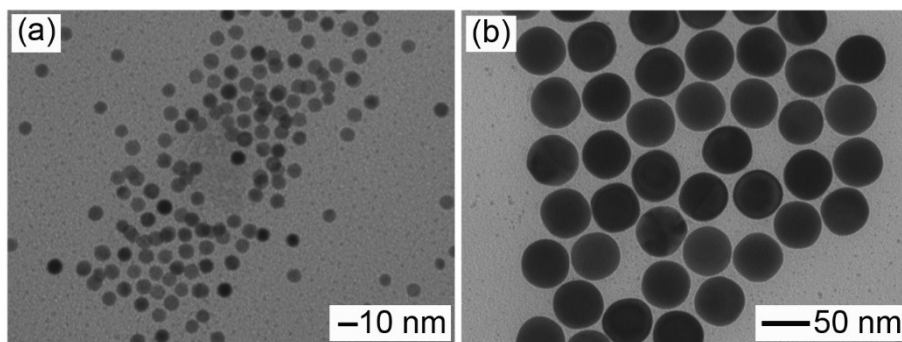


Fig. S7 TEM images of Au nanospheres with the average size of (a) 10 nm and (b) 50 nm.

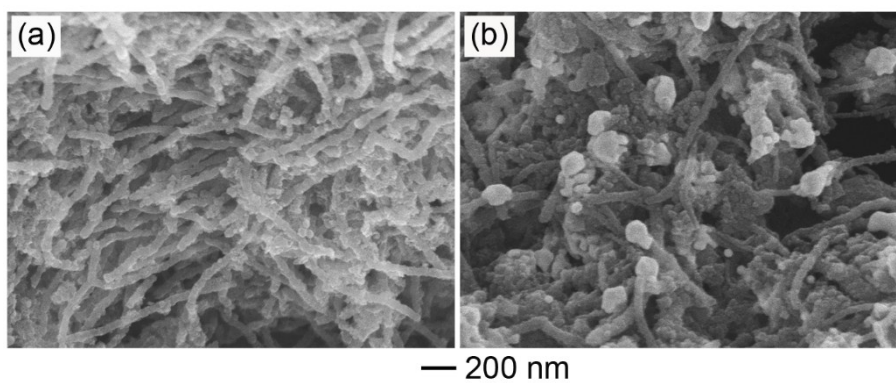


Fig. S8 SEM images of WCNWs membrane (a) before and (b) after filtering the Au nanospheres suspension.

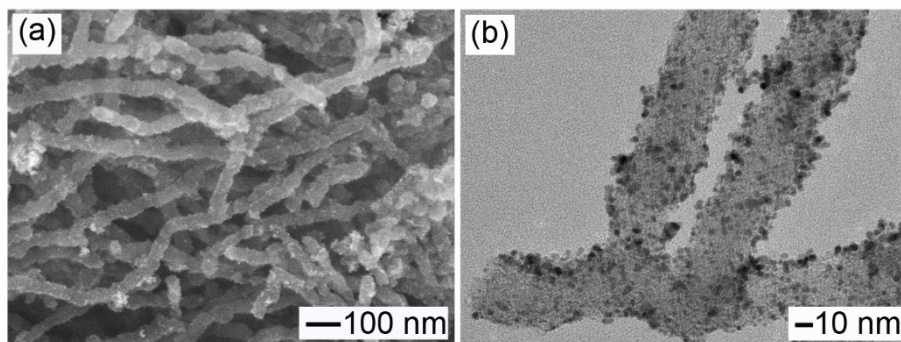


Fig. S9 (a) SEM and (b) TEM image of Pd/WCNWs catalyst.

Table S1. The chemical composition of WCNWs characterized by XPS and elemental analyzer, respectively, before and after calcination under Ar/H₂ (95/5) flow at 1000 °C.

Element	XPS		Elemental Analyzer	
	Before calcination	After calcination	Before calcination	After calcination
	(%)	(%)	(%)	(%)
C	94.43	96.53	89.75	89.99
O	5.57	3.47	9.151	9.415
N	--	--	0.12	0.13
H	--	--	0.979	0.465
S	--	--	--	--