

Supporting Information for

**One-step fabrication of tri-metallic PdCuAu nanothorn assemblies
as an efficient catalyst for oxygen reduction reaction**

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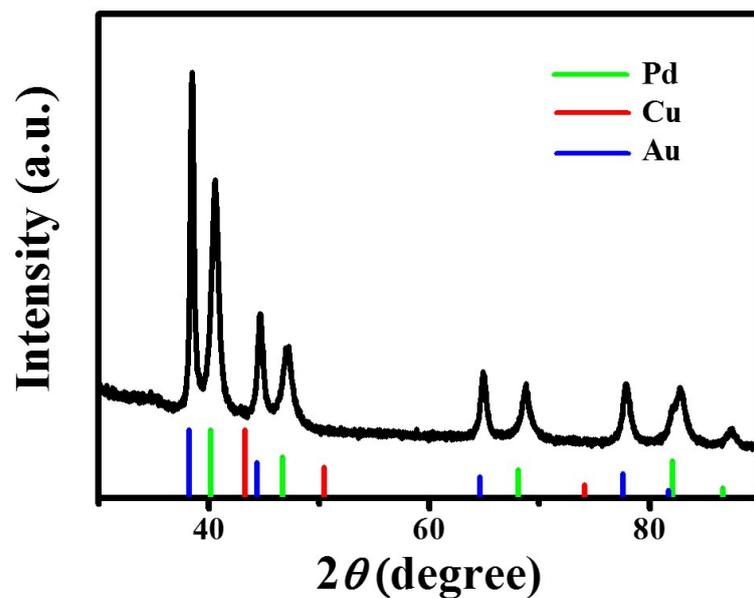


Fig. S1 XRD pattern of PdCuAu NAs.

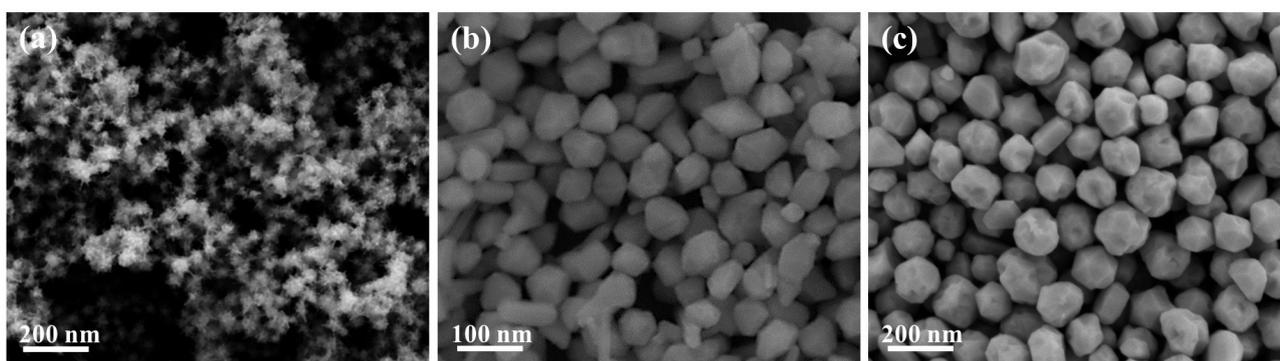


Fig. S2 SEM images of the samples prepared under the identical conditions used for the typical synthesis. (a) Without KBr, (b) monometallic Pd, and (c) bimetallic PdAu nanoparticles.

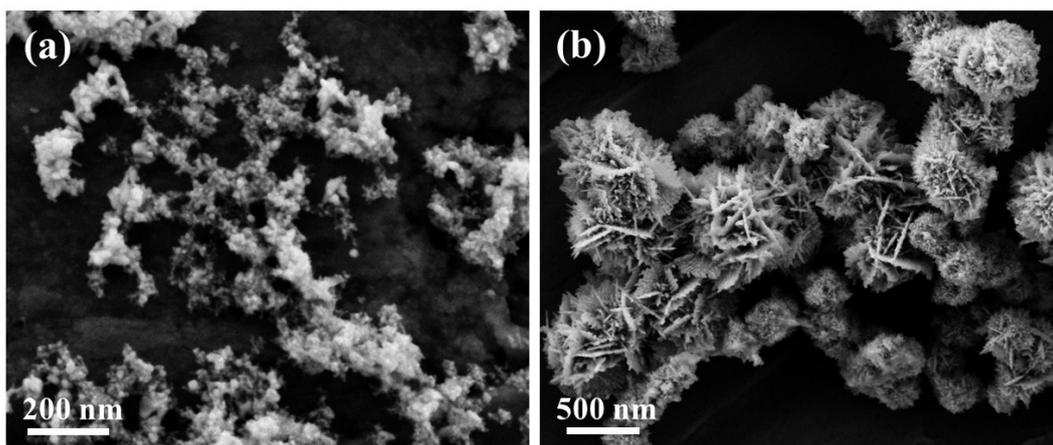


Fig. S3 SEM images of the samples prepared without (a) HCl and (b) F127, respectively, under the identical conditions used for the typical synthesis.

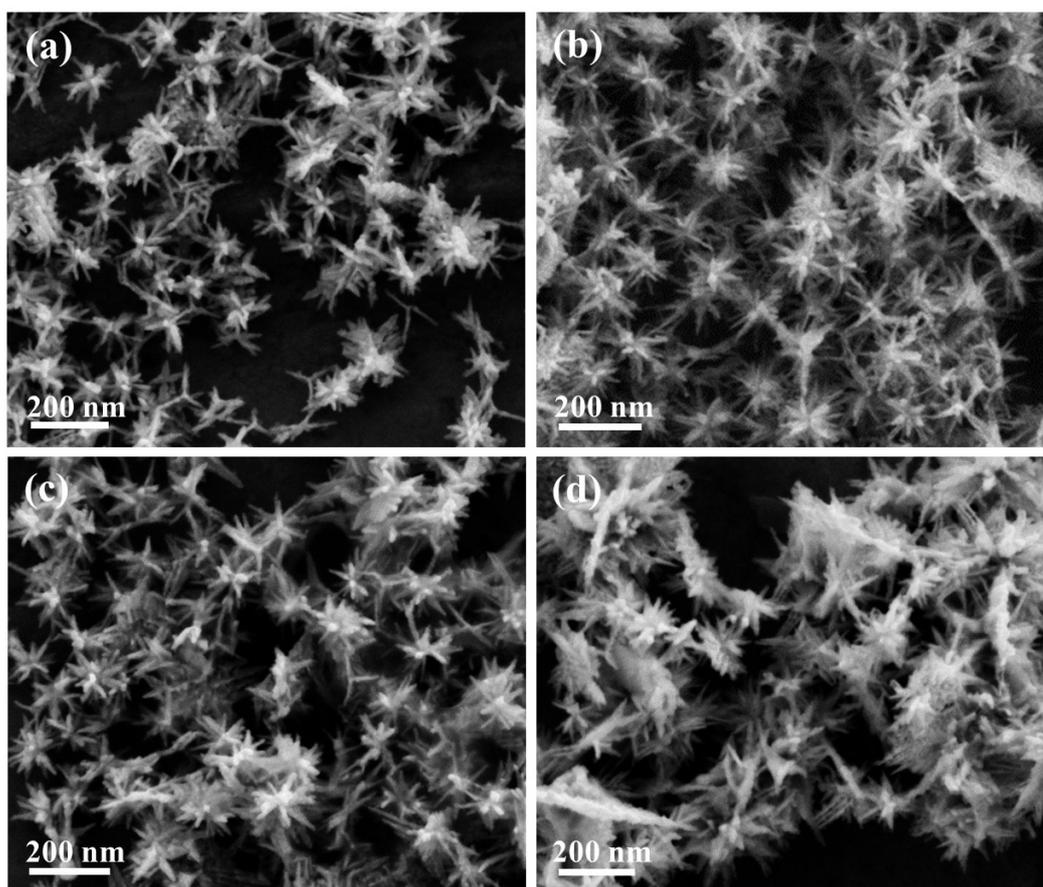


Fig. S4 SEM images of the samples prepared into different reaction times during the typical synthesis. (a) 15 min, (b) 30 min, (c) 60 min and (d) 90 min.

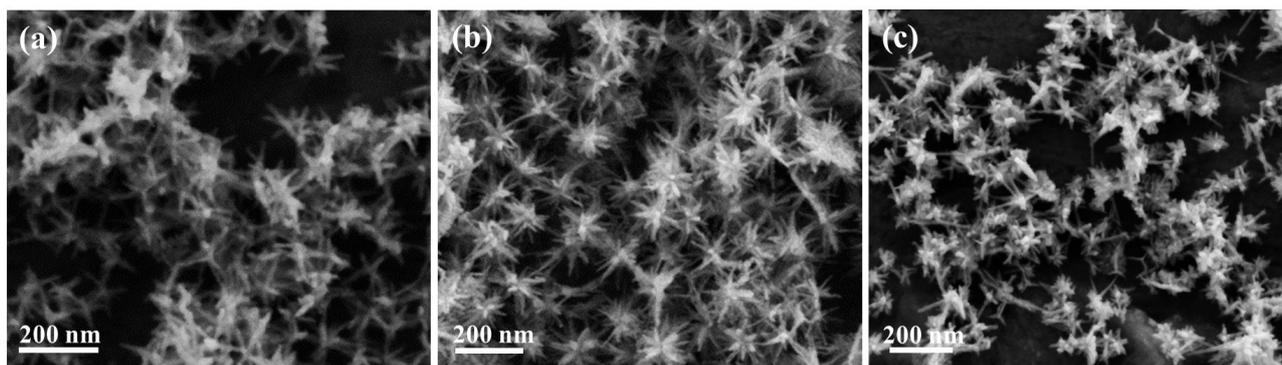


Fig. S5 SEM images of the PdCuAu samples prepared with different metallic precursor amounts under the identical conditions used for the typical synthesis. (a) 1.5 mL of 20 mM Na_2PdCl_4 , 1.5 mL of 20 mM CuCl_2 , 1.5 mL of 20 mM HAuCl_4 ; (b) 2.5 mL of 20 mM Na_2PdCl_4 , 1.0 mL of 20 mM CuCl_2 , 1.0 mL of 20 mM HAuCl_4 ; (c) 3.0 mL of 20 mM Na_2PdCl_4 , 0.75 mL of 20 mM CuCl_2 , 0.75 mL of 20 mM HAuCl_4 .

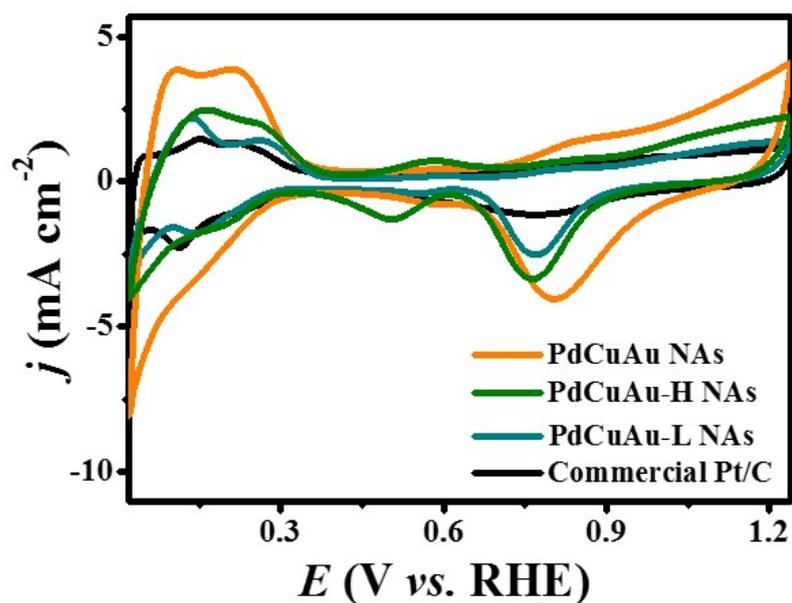


Fig. S6 CV curves of the PdCuAu NAs with different compositions and commercial Pt/C.

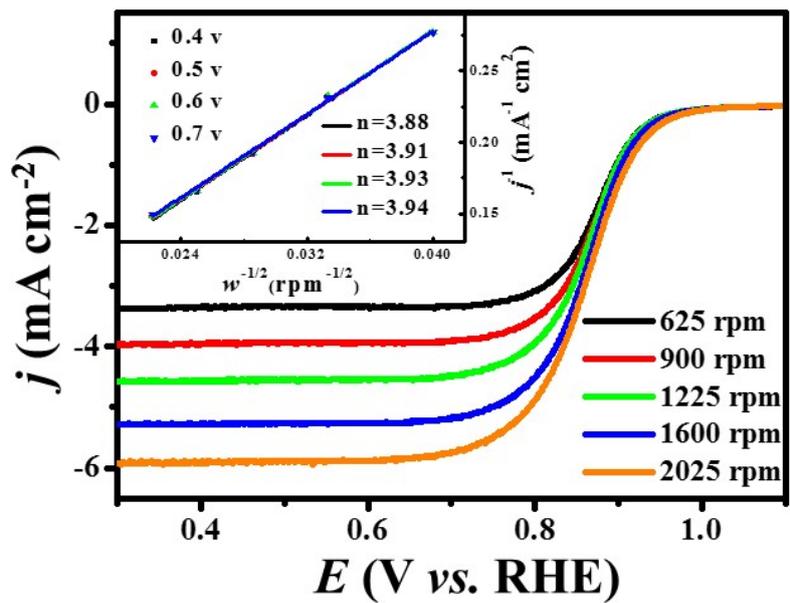


Fig. S7 ORR polarization curves of commercial Pt/C at different RDE rotation rates, the inset shows the electron transfer number at different potentials.

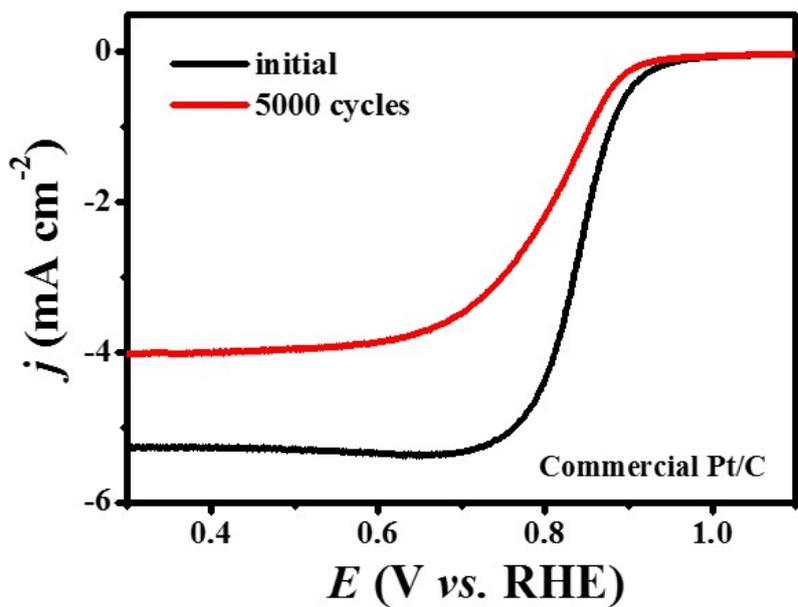


Fig. S8 The ORR polarization curves before and after durability test for commercial Pt/C.