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Supporting information for

Synthesis of core/shell structured Pd_3Au@Pt/C with enhanced electrocatalytic activity by regioselective atomic layer deposition combined with a wet chemical method

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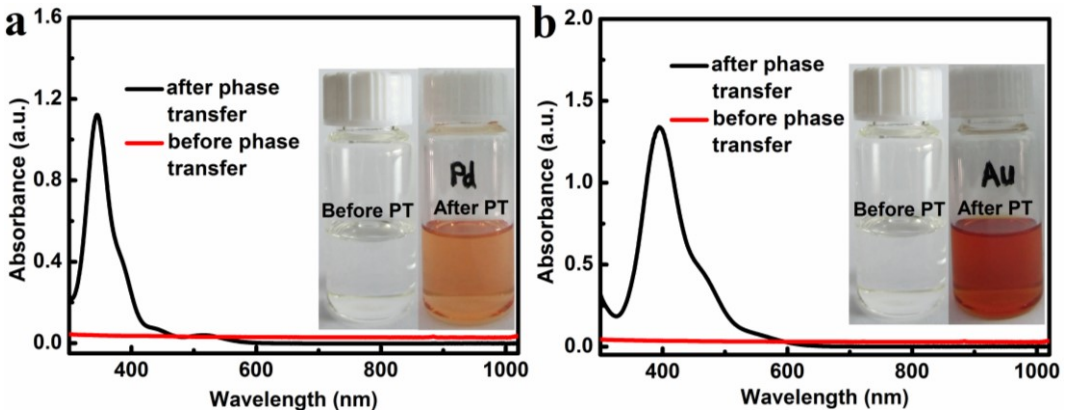

Fig. S1 UV-visible spectrum of chloroform phase before (red line) and after (black line) 1 h of phase transfer process for Pd (II) complex (a) and Au (III) complex (b). Insets: photograph of chloroform phase before (left) and after (right) 1 h of phase transfer process.

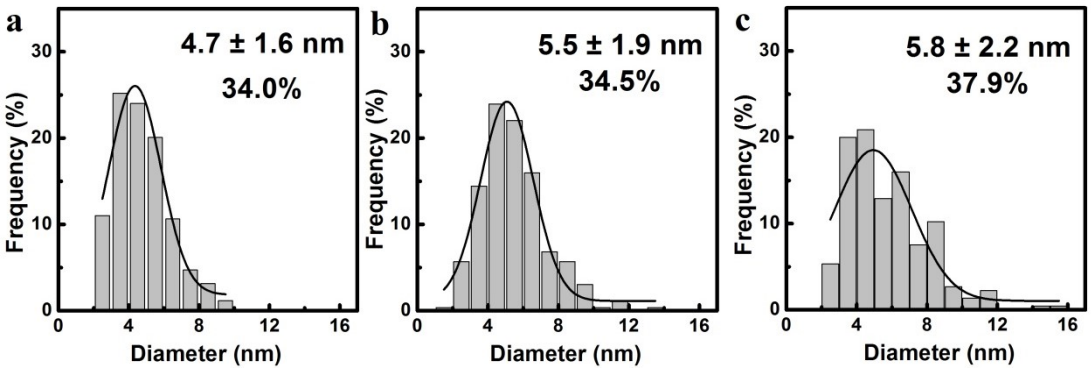

Fig. S2 The particle size distribution histogram of Pd_3Au/C (a), Pd_3Au@Pt/C (b) and Pd_3Au/C (heat) (c), which was plotted after counting randomly selected no less than 200 particles

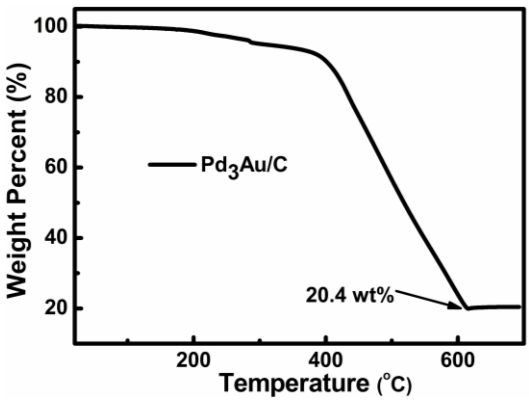

Fig. S3 TGA curve of Pd_3Au/C recorded in a dry air with a heating rate of 10 $^{o}C \cdot min^{-1}$. The weight loss below 100 ^{o}C is due to the release of adsorbed water molecules, and the weight loss from 100 to 400 ^{o}C may come from Pt-catalyzed slow pyrolysis of carbon species, and the sharp weight loss beginning at 400 ^{o}C corresponds to the burning of carbon black.

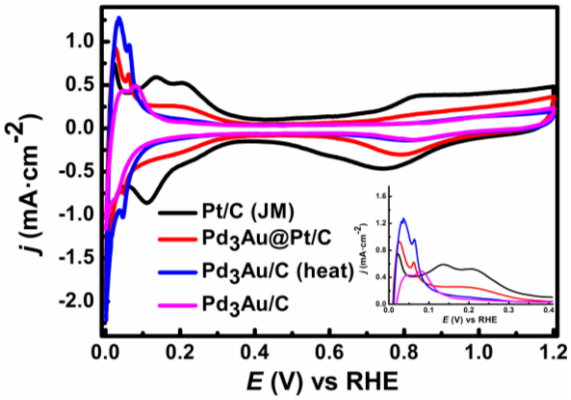

Fig. S4 CV curve of Pt/C (JM), Pd_3Au@Pt/C, Pd_3Au/C (heat) and Pd_3Au/C collected in N_2-saturated 0.1 M $HClO_4$ solution with a sweep rate of 50 $mV \cdot s^{-1}$ at 25 ± 0.5 ^{o}C between 0 and 1.2 V (vs. RHE), inset: enlarged hydrogen desorption region.

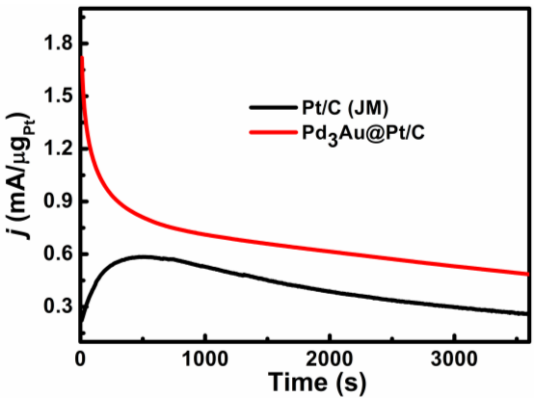

Fig. S5 I-t curve of commercial Pt/C (JM) (black) and Pd_3Au@Pt/C (red) collected at 900 rpm and 25 ± 0.5 ^{o}C in N_2-saturated 0.5 M H_2SO_4 aq. containing 0.5 M FA at 0.5 V (vs. RHE) for 1 h.