Electronic supplementary information for

Graphene Supported Au-Pd Bimetallic Nanoparticles with Core-Shell Structures and Superior Peroxidase-like Activities

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Table S1 The atomic ratio of Au : Pd from the results of TEM-EDX, SEM-EDX and XPS analysis.

	TEM-EDX	SEM-EDX	XPS
Au : Pd (atomic)	14.5:35.5	0.51:1.50	0.05:0.79

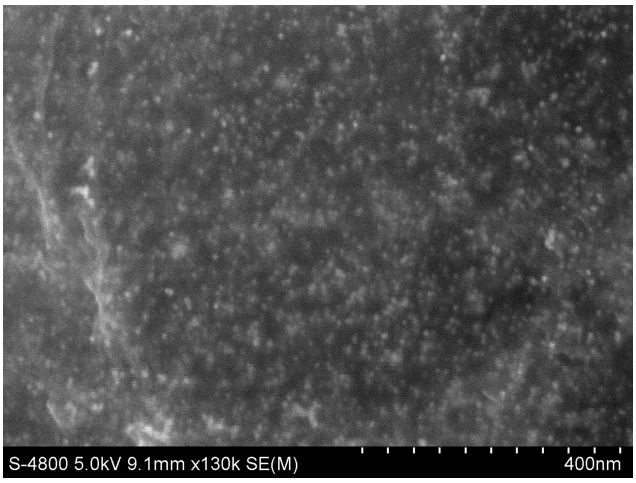

Fig. S1 SEM image of Au@Pd–G hybrids.

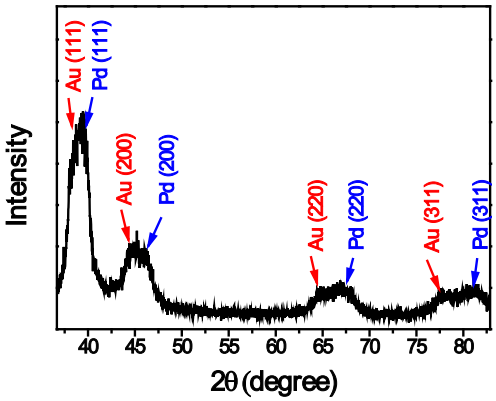

Fig. S2 XRD pattern of the as prepared Au@Pd–G hybrids (four peaks were assigned to (111), (200), (220), and (311) facets of crystal diffraction).

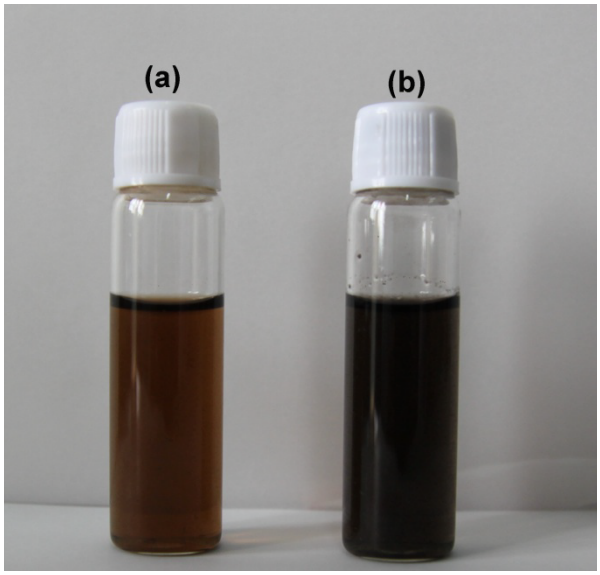

Fig. S3 Photograph of Graphene oxide suspension (a) and Au@Pd–G hybrids (b) stored for several months. The as prepared products have great dispersibility in water, since no obvious precipitation can be observed.

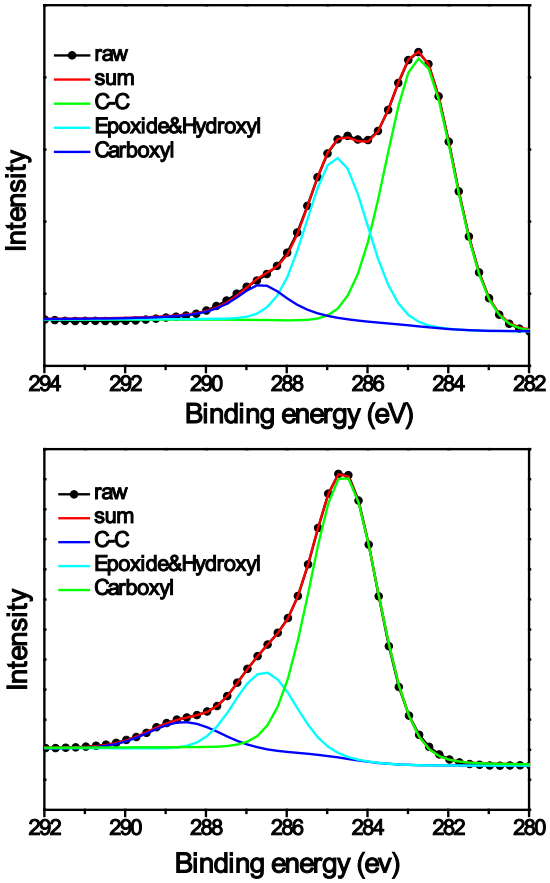

Fig. S4 XPS Spectra of GO (a) and the as–prepared Au@Pd–G hybrids.

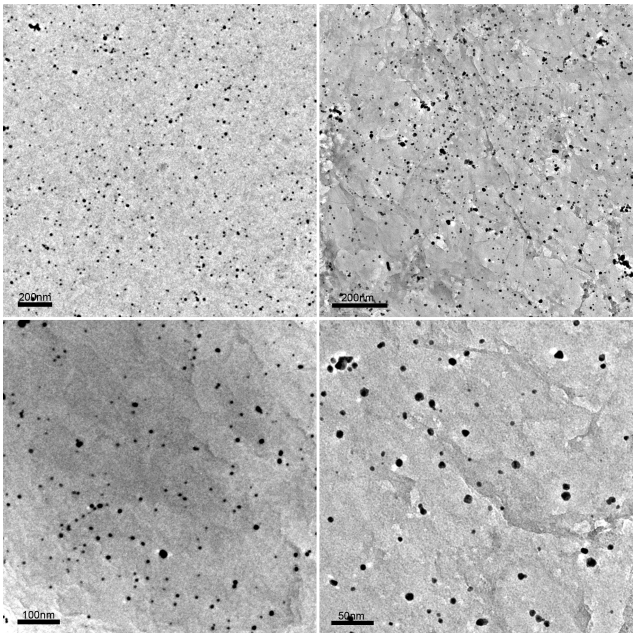

Fig. S5 TEM images of Au–G hybrids (a) and (c), Pd–G hybrids (b) and (d) (the preparation conditions are same as the Au@Pd–G hybrids).

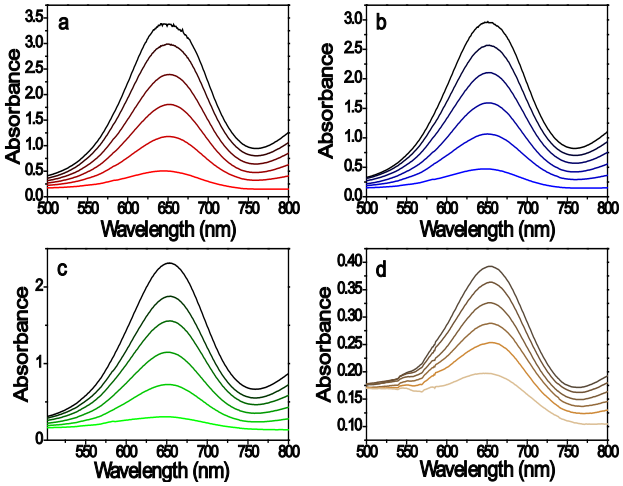

Fig. S6 The evolutions of absorbance spectra for TMB oxidation over time in the presence of Au@Pd–G hybrids with an average diameter of 7.4 nm (a) Au@Pd–G hybrids with an average diameter of 10.9 nm (b), Pd–G hybrids (c) Au–G hybrids (d). In all the reactions, 30 μg catalysts were used and other conditions were also kept constant.

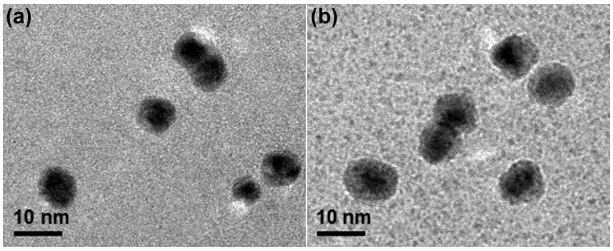

Fig. S7 TEM image of Au@Pd–G hybrids with an average diameter of 7.4nm (a) TEM image of Au@Pd–G hybrids with an average diameter of 10.9 nm (b). Obvious increase of the thickness can be easily observed. The nanoparticles should be tightly bound on the surface of graphene, and no free nanoparticles could be observed outside the graphene sheets, even after intensive sonication during the preparation of the sample for TEM characterization.

Table S2 ICP Results

	Au (mg/L)	Pd (mg/L)	Total loading (wt%)
Au@Pd–G (7.4nm)	62.484	90.201	12.7
Au@Pd–G (10.9nm)	65.52	107.21	14.4
Au–G	163.66	0.18448	13.6
Pd–G	0.523	150.16	12.5

[a] ICP analysis was measured with same amount of samples (25 mL solution of metal ions from 30 mg hybrids). The trace amount of Au (in Pd–G) and Pd (in Au–G) should be attributed to the residual containments. Note that the total loading of the nanoparticles is slightly lower than the compositions calculated from corresponding precursors, due to their lose during the calcining and dissolving processes before ICP analysis.