Supporting Information:

Facile one-pot synthesis of Pd-PEDOT/graphene nanocomposites with hierarchical structure and high electrocatalytic performance for ethanol oxidation

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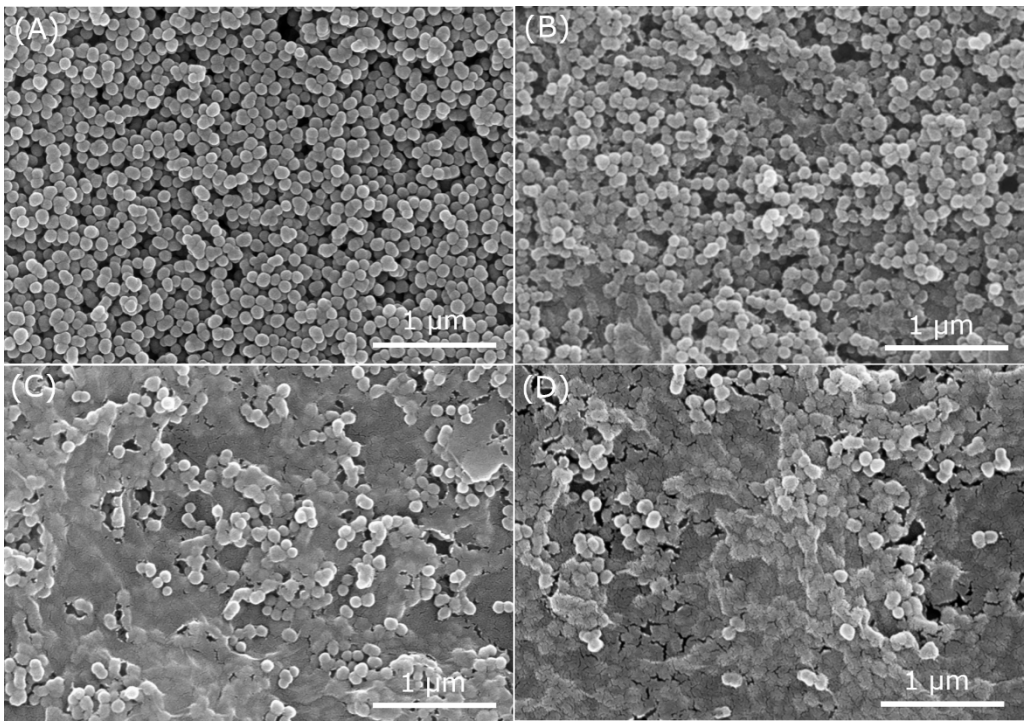

Fig. S1 SEM images of (A) Pd-PEDOT and (B-D) Pd-PEDOT/GE nanocomposites with 1.4%, 2.8%, and 5.4% (by weight) contents of GE, respectively.

Table S1 Comparison of the electrocatalytic performance of the prepared Pd-PEDOT/GE nanocomposites with some previously reported catalysts toward ethanol oxidation in alkaline medium.

Sample	Synthetic method	Particle size of Pd	$E_{co,o}$ (V *vs*. SCE)	$E_{co,p}$ (V *vs*. SCE)	E_f (V *vs*. SCE)	j_f		Ref.
						(A g^{-1} Pd)	(A m^{-2} ECSA)	
Pd/PANI/Pd SNTA	Template-assisted electrodepo-sition	3−4 nm	-0.20	0.05	-0.25	~365	--	1
Pd- GE	Hydrothermal processing and $NaBH_4$ reducing method	~3 nm	--	--	-0.26 (V vs. Ag/AgCl)	--	~37.5	2
Pd-WC/GE	A modified electroless plating technique	5−10 nm	-0.26	-0.22	-0.26	--	35.7	3
Pd/PEDOT-GE hybrids (common)	Multi-step chemical method	5–10 nm	-0.25	−0.186 ± 0.002	−0.291 ± 0.007	197.2 ± 17.5	~5.03	4
Pd-PEDOT/GE nanocomposites	One-pot method	~3.6 nm	–0.27	–0.22	–0.28	458.5	34.9	this work

1 A. L. Wang, H. Xu, J. X. Feng, L. X. Ding, Y. X. Tong and G. R. Li, *J. Am. Chem. Soc.*, 2013, **135**, 10703-10709.

2 J. Yang, Y. Xie, R. H. Wang, B. J. Jiang, C. G. Tian, G. Mu, J. Yin, B. Wang and H. G. Fu, *ACS Appl. Mater. Interfaces*, 2013, **5**, 6571-6579.

3 L. N. Gao, W. B. Yue, S. S. Tao and L. Z. Fan, *Langmuir*, 2013, **29**, 957-964.

4 F. X. Jiang, Z. Q. Yao, R. R. Yue, J. K. Xu, Y. K. Du, P. Yang and C. Y. Wang, *J. Solid State Electrochem*., 2013, **17**, 1039-1047.