Supporting information

Etching high-Fe-content PtPdFe nanoparticles as efficient catalysts towards glycerol electrooxidation

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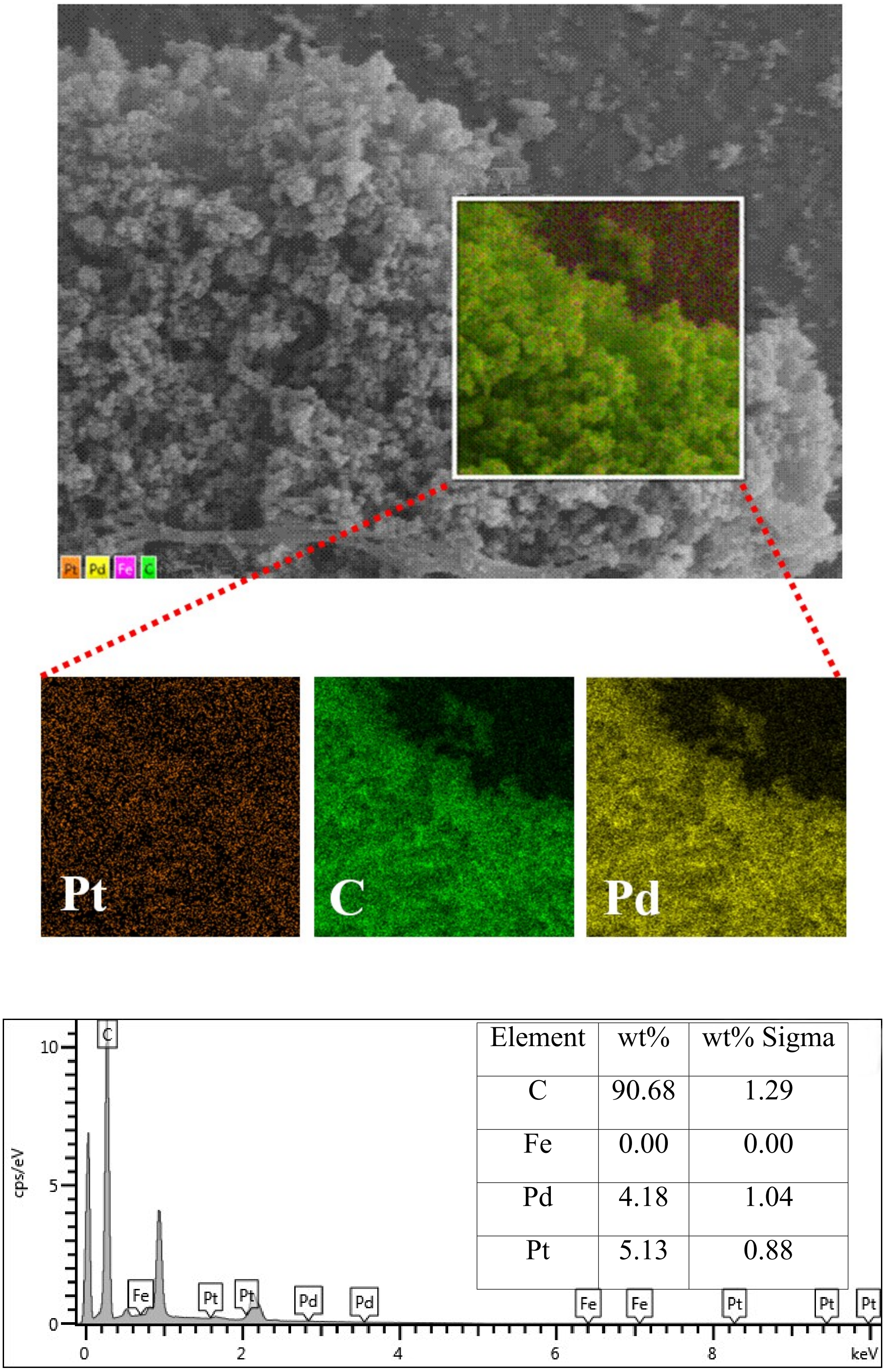

Element	wt%	wt% Sigma
C	90.68	1.29
Fe	0.00	0.00
Pd	4.18	1.04
Pt	5.13	0.88

Fig. S1 SEM and corresponding EDS of PtPd-6/C.

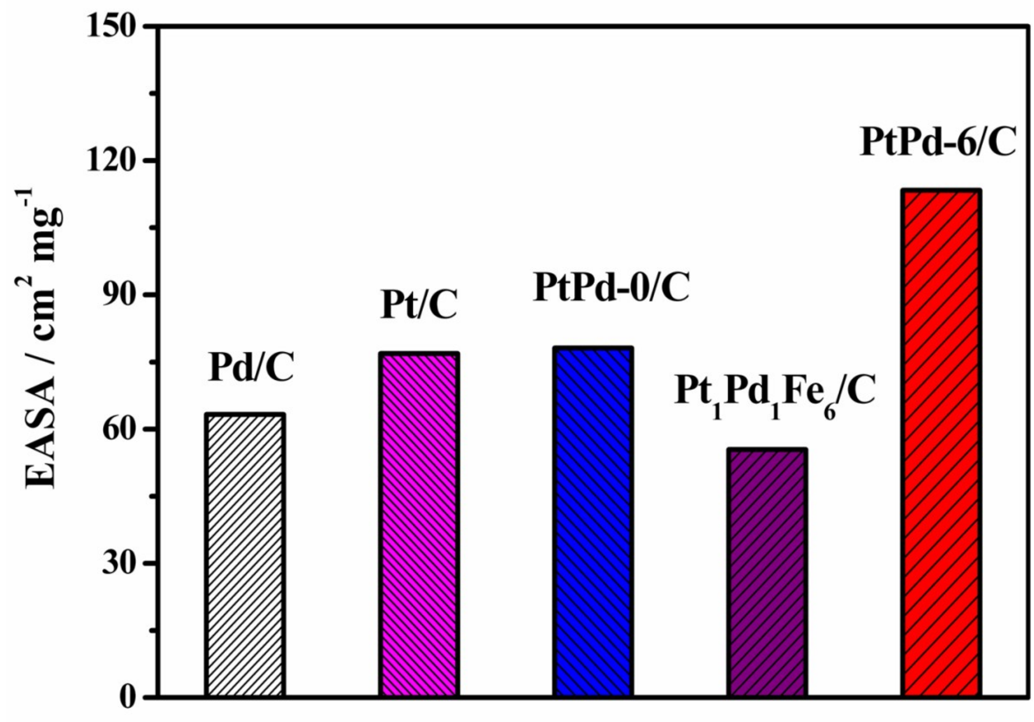

Fig. S2 The EASA comparison on Pd/C, Pt/C, PtPd-0/C, $Pt_1Pd_1Fe_6$/C and PtPd-6/C.

Table S1. Comparison of electrocatalytic performance on noble metal-based electrocatalysts toward GOR in alkaline medium.

Electrocatalysts	Particle size (nm)	Electrolyte	Oxidation peak current (A mg^{-1} $_{noble\ metal}$)	Noble metal loading (%)	References
PtPd-6/C	2.8	0.1 M KOH + 0.5 M Glycerol	0.86 (*vs.*Ag/AgCl)	9.41	This work
$Pd_{55}Pt_{30}$ NNWs	5.0	1.0 M KOH + 0.1 2M Glycerol	0.66 (*vs.*Ag/AgCl)	25.57	[1]
$Pd_{0.5}Au_{0.5}$/C	5.0	1.0 M NaOH + 0.1 M Glycerol	0.09 (*vs.*RHE)	37.00	[2]
Pd-NiO_x-P/C	4.4	0.1 M KOH + 0.5 M Glycerol	0.36 (*vs.*Ag/AgCl)	14.00	[3]
Pd/Cu/NPSS	N/A	1.0 M KOH + 5 wt.% Glycerol	0.82 (*vs.*Ag/AgCl)	11.78	[4]
Pd-CN_x/G	4.4	0.5 M NaOH + 0.5 M Glycerol	1.10 (*vs.*Hg/HgO)	28.00	[5]
FeCo@Fe@Pd/C	3~7	0.5 M KOH + 0.5 M Glycerol	0.26 (*vs.*Ag/AgCl)	22.00	[6]
Pt_5Ru_5/GNS	1.8	Biomass-derived glycerol	0.27 (*vs.*Ag/AgCl)	60.00	[7]
$Pd_{50}Ag_{50}$/C	3.73~3.97	0.1 M NaOH + 0.1 M Glycerol	0.26 (*vs.*RHE)	25.60	[8]
Pd/CPAA	N/A	1.0 M KOH + 1.0 M Glycerol	0.24 (*vs.*Hg/HgO)	50.00	[9]
Pd_3Sn/phen-C	5.3	0.1 M KOH + 0.5 M Glycerol	0.18 (*vs.*Ag/AgCl)	14.80	[10]
Pd_3Cu/NMC	N/A	0.1 M KOH + 0.5 M Glycerol	0.33 (*vs.*Ag/AgCl)	13.90	[11]

References

[1] W. Hong, C. Shang, J. Wang, E. Wang, *Energy Environ. Sci.*, 2015, **10**, 2910-2915.

[2] M. Simões, S. Baranton, C. Coutanceau, *Appl. Catal. B: Environ.*, 2010, **93**, 354-362.

[3] X. Zhao, J. Zhang, L. Wang, H.X. Li, Z. Liu, W. Chen, *ACS Appl. Mater. Inter.*, 2015, **7**, 26333-26339.

[4] B. Rezaei, E. Havakeshian, A.A. Ensafi, *Electrochim. Acta*, 2014, **136**, 89-96.

[5] A. Zalineeva, A. Serov, M. Padilla, U. Martinez, K. Artyushkova, S. Baranton, C. Coutanceau, P.B. Atanassov, *J. Am. Chem. Soc.*, 2014, **136** 3937-3945.

[6] O.O. Fashedemi, K.I. Ozoemena, *Electrochim. Acta*, 2014, **128**, 279-286.

[7] H.J. Kim, S.M. Choi, M.H. Seo, S. Green, G.W. Huber, W.B. Kim, *Electrochem. Commun.*, 2011, **13**, 890-893.

[8] Y. Holade, C. Morais, S.A. Clacens, K. Servat, T.W. Napporn, K.B. Kokoh, *Electrocatalysis*, 2013, **4**, 167-178.

[9] Z. Wang, F. Hu, P.K. Shen, *Electrochem. Commun.*, 2006, **8**, 1764-1768.

[10] W. Wang, Y. Kang, Y. Yang, Y. Liu, D. Chai, Z. Lei, *Int. J. Hydrogen Energy*, 2016, **41**, 1272-1280.

[11] H. Wang, L. Thia, N. Li, X. Ge, Z. Liu, X. Wang, *ACS Catal.*, 2015, **5**, 3174-3180.