

Supporting information

Porous fluorine-doped tin oxide as a promising substrate for electrochemical biosensors – demonstration in hydrogen peroxide sensing

Kuan-Ting Lee,¹⁾ Dai-Min Liu,¹⁾ Yung-Yung Liang,¹⁾ Nobuhiro Matsushita,²⁾

*Toshiyuki Ikoma³⁾, Shih-Yuan Lu¹⁾**

1) Department of Chemical Engineering, National Tsing Hua University, Hsinchu 30013, TAIWAN, 2) Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama, 226-8503, JAPAN, 3) Department of Inorganic Materials, Tokyo Institute of Technology, 2-12-1 Ookayama, Meguro-ku, Tokyo, 152-8550, JAPAN.

*Email : SYLu@mx.nthu.edu.tw

More Results and Discussion:

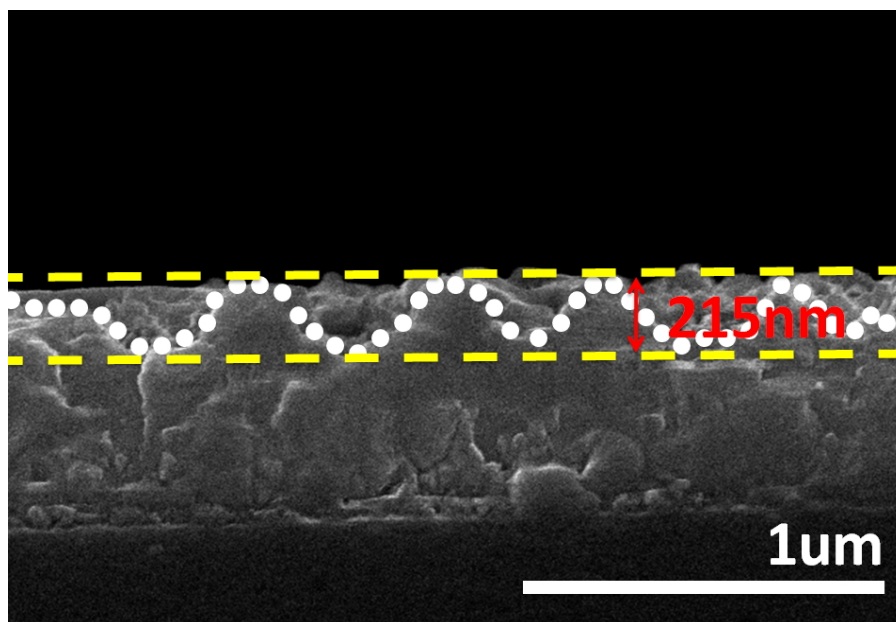


Fig. S1 Cross-sectional SEM image of electrochemically treated FTO sample (7 V, 0.07M, 30 min).

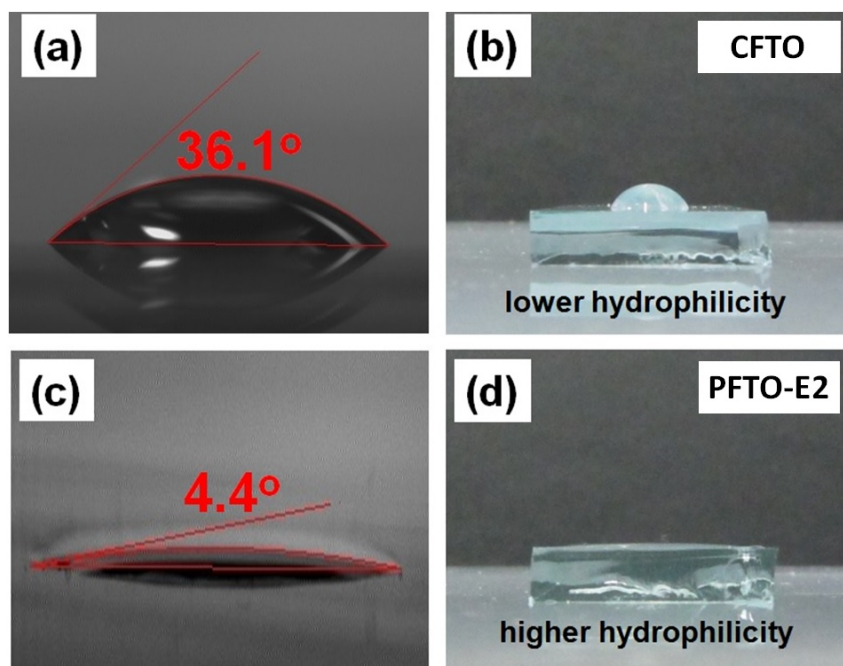


Fig. S2 Contact angles of (a) CFTO and (c) PFTO-E2, and corresponding photographs of water droplet on (b) CFTO and (d) PFTO-E2.

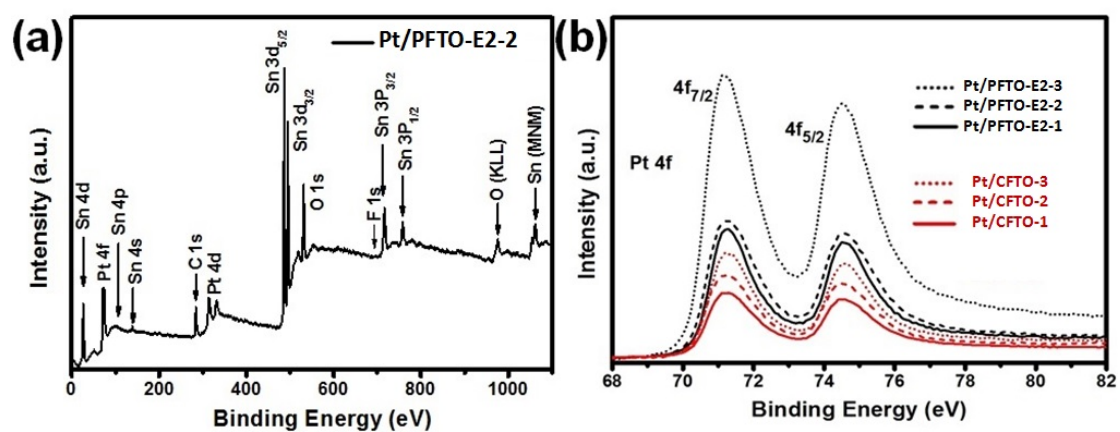


Figure S3 (a) Wide scan XPS spectrum of Pt/PFTO-E2-2. (b) Pt 4f core level XPS spectra for samples Pt/CFTO-1, Pt/CFTO-2, Pt/CFTO-3, Pt/PFTO-E2-1, Pt/PFTO-E2-2, and Pt/PFTO-E2-3.

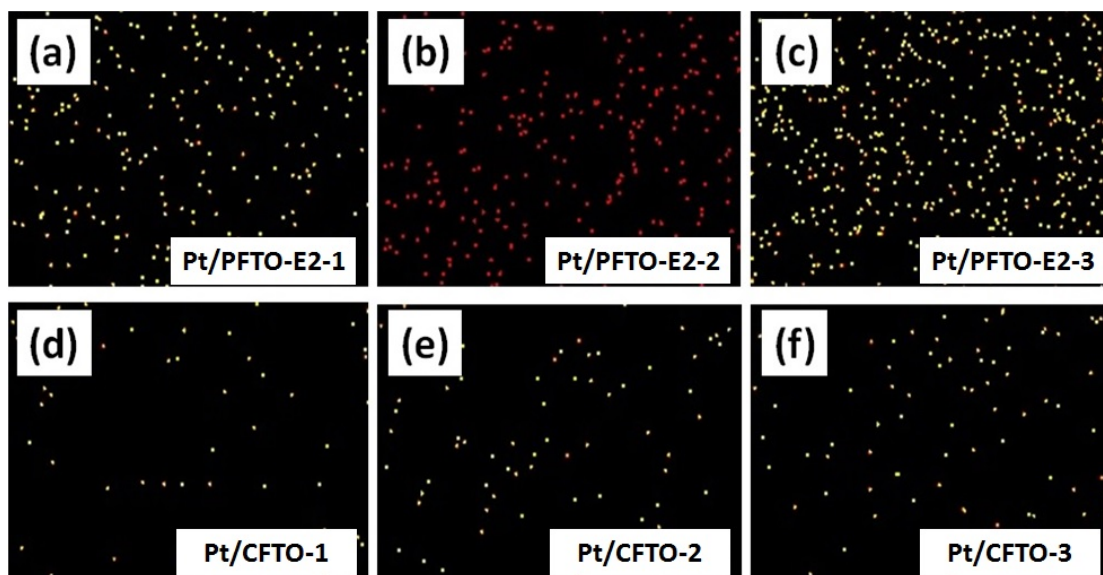


Fig. S4 EDX mapping of Pt on samples (a) Pt/PFTO-E2-1, (b) Pt/PFTO-E2-2, (c) Pt/PFTO-E2-3, (d) Pt/CFTO-1, (e) Pt/CFTO-2, and (f) Pt/CFTO-3.

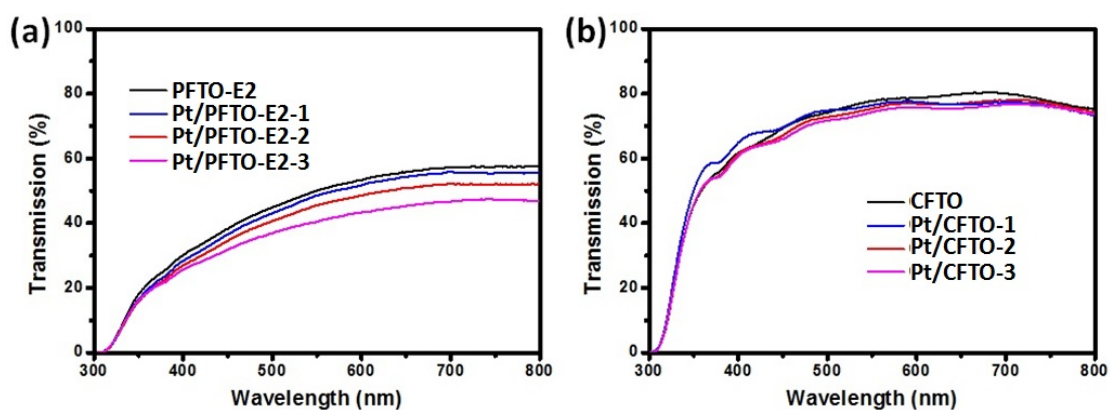


Fig. S5 Transmission spectra of (a) samples PFTO-E2, Pt/PFTO-E2-1, Pt/PFTO-E2-2, Pt/PFTO-E2-3, and (b) samples CFTO, Pt/CFTO-1, Pt/CFTO-2, Pt/CFTO-3.

Table S1 Surface roughness of FTO substrates with Pt decorated in different concentration of H_2PtCl_6 .

	0mg (nm)	0.25mg (nm)	0.5mg (nm)	5mg (nm)
Pt/CFTO	18.1	16.7	16.1	17.2
Pt/PFTO-E2	36.5	29.5	45.8	20.9

Table S2 XPS analyses of Pt decorated CFTO and PFTO electrodes.

	0.25mg (at%)	0.5mg (at%)	5mg (at%)
--	--------------	-------------	-----------

Pt/CFTO	2.4	3.5	4.4
Pt/PFTO-E2	5.4	6.9	15.3

Table S3 sheet resistances and static contact angles of both Pt/CFTOs and Pt/PFTOs

	0mg	0.25mg	0.5mg	5mg
	Ω/\square	Ω/\square	Ω/\square	Ω/\square
Pt/CFTO	7.2	7.6	8.1	7.3
Pt/PFTO-E2	17.1	14.9	12.7	10.5

	0mg	0.25mg	0.5mg	5mg
Pt/CFTO	36°	37°	44°	48°
Pt/PFTO-E2	4°	52°	71°	88°