Tiny nanoparticles of organometallic polymers through direct disassembly-assisted synthesis strategy for hydrogen peroxide sensing

Guodong Liang,*[a] Xiaodong Li,[a] Bin Fei,*[b] Xiaomei Wang[a] and Fangming Zhu[a]

[a]*DSAP lab, PCFM lab, GDHPPC lab, School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, China; E-mail: lgdong@mail.sysu.edu.cn*

[b]*Institute of Textiles & Clothing, The Hong Kong Polytechnic University, Hong Kong, China.*

Calculation of aggregation number of BEB-PB nanoparticles

Weight of material of BEB-PB nanoparticles, W, can be obtained from

$$W = V \cdot \rho \tag{1}$$

V is the volume of nanoparticles, going with

$$V = \frac{\pi D^3}{6} \tag{2}$$

the diameter of BEB-PB nanoparticles is determined with TEM.

$$\rho = w_{\mathrm{P}} \cdot \rho_{\mathrm{P}} + w_{\mathrm{PB}} \cdot \rho_{\mathrm{PB}} \tag{3}$$

w_{P} and w_{PB} are the weight percentage of BEB and PB in nanoparticles. ρ_{P} and ρ_{PB} are density of BEB triblock copolymer and Prussian blue, being 1.2 and 1.8 g cm^{-3} (http://www.chemicalbook.com/ProductChemicalPropertiesCB4134130_EN.htm),

respectively.

The number of polymers is estimated from

$$N = \frac{W \cdot (1 - w_c)}{M_{BEB}} \cdot N_0 \quad (4)$$

M_{BEB} is the number-average molecular weight of BEB, being 48600 g/mol. N_0 is avogadro constant.

Electrochemical performance of bare electrodes and conventional PB particles.

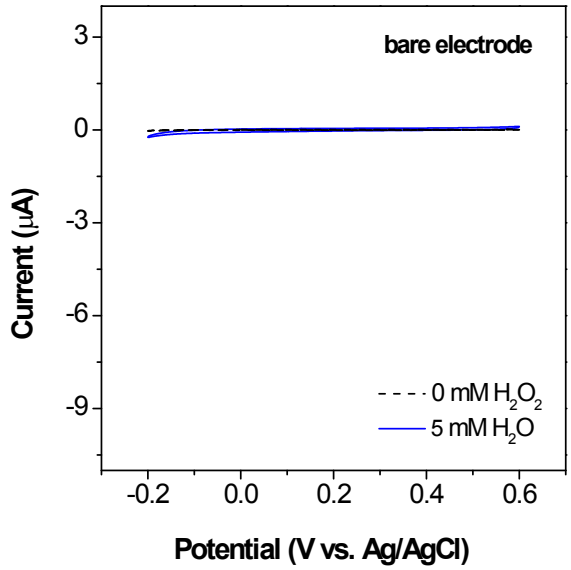

Fig. S1 Cyclic voltammogram of bare glassy carbon electrode in 20 mM sodium phosphate buffer solution in the absence (dashed curves) and the presence of 5 mM H_2O_2 (solid curves). Scan rate: 50 mV s^{-1}, under N_2.

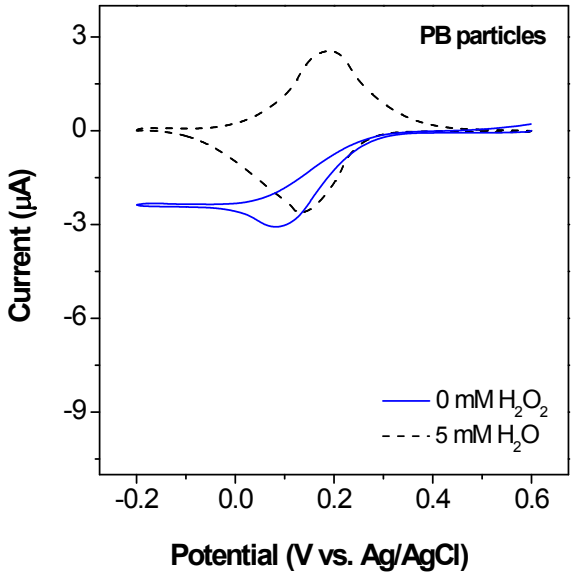

Fig. S2 Cyclic voltammogram of conventional PB particles decorated electrode in 20 mM sodium phosphate buffer solution in the absence (dashed curves) and the presence of 5 mM H_2O_2 (solid curves). Scan rate: 50 mV s^{-1}, under N_2.