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

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Calculation of aggregation number of BEB-PB nanoparticles

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

\[
W = V \cdot \rho
\]

(1)

\( V \) is the volume of nanoparticles, going with

\[
V = \frac{\pi D^3}{6}
\]

(2)

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

\[
\rho = w_p \cdot \rho_p + w_{PB} \cdot \rho_{PB}
\]

(3)

\( w_p \) and \( w_{PB} \) are the weight percentage of BEB and PB in nanoparticles. \( \rho_p \) and \( \rho_{PB} \) 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](http://www.chemicalbook.com/ProductChemicalPropertiesCB4134130_EN.htm)).
respectively.

The number of polymers is estimated from

\[ N = \frac{W \cdot (1 - w_0)}{M_{\text{BEB}}} \cdot N_0 \]  

(4)

\( M_{\text{BEB}} \) 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.**

![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 H₂O₂ (solid curves). Scan rate: 50 mV s⁻¹, under N₂.](image)

**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 H₂O₂ (solid curves). Scan rate: 50 mV s⁻¹, under N₂.
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$_2$O$_2$ (solid curves). Scan rate: 50 mV s$^{-1}$, under N$_2$. 