

表面与界面工程

自组装普鲁士蓝膜修饰电极的制备及表征

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摘要

通过静电自组装技术在Pt电极表面组装了不同层数的普鲁士蓝(PB)膜,得到了PB修饰的Pt电极。分别利用扫描电镜(SEM)和紫外-可见分光光度计(UV-Vis)表征膜的形貌及光学特性,并且采用循环伏安法(CV)测量膜修饰的Pt电极的循环伏安特性。结果表明:通过自组装技术可以制备出可控厚度的纳米尺度的PB膜修饰电极,膜的紫外吸收峰强度与组装层数符合线性关系,膜的组成同时含有可溶和不溶性PB,且循环伏安法所得到的峰电流正比于扫描速度的平方根以及PB的本体浓度,修饰电极具有好的电化学性能,可用于生物传感器。

关键词

[自组装](#) [普鲁士蓝](#) [薄膜](#) [修饰电极](#)

分类号

Preparation and characterization of electrodes modified by self-assembled Prussian blue film

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Abstract

A series of Prussian blue(PB) modified Pt electrodes with various layers were prepared by electrostatic layer-by-layer adsorption of iron (III) and hexacyanoferrate (II) on Pt electrodes. Scanning electron microscopy (SEM) and UV-visible spectroscopy (UV-Vis) were used to observe their morphologies and optical properties, while the electrochemical properties were determined by cyclic voltammogram (CV). The results showed that the nano-size PB film could be self-assembled on the Pt electrodes with a controlled thickness, and the UV-Vis absorbance was linear with the dipping cycles. Both soluble and insoluble Prussian blue were the components of the film. The cyclic voltammograms showed that the peak current was in proportion to the square root of scan rate and the concentration of PB. The as-prepared modified electrodes can be used as biosensors.

Key words

[self-assembly](#) [Prussian blue](#) [film](#) [modified electrode](#)

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