

研究论文

聚苯胺纳米线修饰的DNA电化学传感器的研究

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摘要 采用电流密度递减的方法在玻碳电极表面修饰聚苯胺纳米线(PAINW), 以SEM对其形貌进行表征, 测得PAINW的尖端直径在80~100 nm之间. 以乙基-(3-二甲基丙基)碳化二亚胺盐酸盐(EDC)为偶联活化剂, 将5'-磷酸基修饰的寡聚核苷酸片断共价固定在聚苯胺修饰的电极上, 一定条件下, 以亚甲基蓝为电化学杂交指示剂, 采用差分脉冲伏安法对杂交信号进行检测, 实现了对特定序列DNA片段的互补、非互补序列的识别.

关键词 [聚苯胺纳米线](#) [DNA杂交](#) [电化学检测](#)

分类号

Study of Polyaniline Nanowire Modified Electrode for Electrochemical DNA Biosensor

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Abstract Polyaniline nanowires were electrodynamically deposited onto the glass carbon electrode (GCE) and the diameters of the tips range from 80 to 100 nm examined by a field emission scanning electron microscope (SEM). Oligonucleotides with phosphate groups at the 5' end were covalently linked onto amido groups of polyaniline nanowires in the presence of the water-soluble coupling reagent 1-ethyl-3-(3-dimethyl-aminopropyl)-carbodiimide (EDC). The hybridization events were monitored with differential pulse voltammetry (DPV) measurement using methylene blue (MB) as the indicator and the decreases in the peak currents of MB were observed. The approach described here can effectively discriminate complementary from noncomplementary DNA sequence.

Key words [polyaniline nanowire](#) [DNA hybridization](#) [electrochemical detection](#)

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