Electrochemical Detection of Hydrazine Based on Facial Synthesized Sulfur-Poly(Pyrrole-Co-Aniline) Nano-Fiber

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Chemical oxidation method was explored to prepare the poly(pyrrole-co-aniline) (PPyA) copolymer. Cetyltrimethyl ammonium chloride (CTAC) was used as the template in the oxidation reaction. Then the S/PPyA composite (nano-sulfur/poly(pyrrole-co-aniline)) was obtained by treating the mixture of sublimed sulfur and PPyA at 160 °C for 24 h. The as-prepared PPyA and S/PPyA were characterized by various techniques including X-ray powder diffraction (XRD), scanning electron microscopy (SEM), Raman spectroscopy and Fourier transform infrared spectroscopy (FTIR). The S/PPyA was used to modify the glassy carbon electrode (GCE) and the electrochemical activity of as-synthesized S/PPyA/GCE for the oxidation of hydrazine was investigated. The low detection limit of 0.18 μM (S/N=3) and fast response time within 3 s were achieved. The remarkable performance makes S/PPyA/GCE a promising electrode applied in the construction of sensors for the determination of hydrazine.

Keywords: Poly(pyrrole-co-aniline); Sensor; Electrochemistry; Hydrazine; Composite

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