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In situ fabrication of cobalt nanoflowers on sulfonated and fluorinated poly (arylene ether ketone-benzimidazole) template film for the electrocatalytic oxidation of glucose

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Abstract Using sulfonated and fluorinated poly (arylene ether ketone) comprising functional strong coordination group benzimidazole (SPA EK-F-BI) as a template film, a novel fabrication method of cobalt nanoflowers (CoNFs) and non-enzymatic glucose electrochemical sensor was developed in this work. After the precursors Co^{2+} ions were cooperatively bound by sulfonate and imidazole functionalities contained in SPA EK-F-BI film through ion exchange and strong coordination action, cobalt colloid nuclei were formed and grew to flower-like nanostructures by subsequent in-situ electrochemical reduction on SPA EK-F-BI film modified GCE. Characterization of SPA EK-F-BI film and CoNFs/SPA EK-F-BI film on GCE was performed in detail by FT-IR spectroscopy and scanning electron microscopy (SEM) attached with energy dispersive spectroscopy (EDS), electrochemical impedance spectroscopy (EIS) and cyclic voltammetry (CV). The results of SEM showed that beautiful CoNFs constructed by Co colloid nanosheets with just a few nanometers thickness were well

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