One-Pot Synthesis of MoS₂ Flowers Grown On Prussian Blue Cubes For the Sensitive Detection of Catechol In Water Samples

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Herein, we reported a robust electrochemical sensor to detect catechol, developed through the one-pot synthesis of MoS₂ flowers grown on Prussian Blue Cubes. Recently, numerous articles reported about the issue that the water resources were polluted excessively by the chemical and organic toxins. It is a significant concern that the level of toxic compounds exceeds the limits in drinking. Therefore, it is crucial to develop a sensitive, reproducible and long-lasting sensor for the real-time detection of catechol. Thus, we have generated an electrochemical sensor through the economic screen-printed carbon electrode (SPCE) modification method. PB/MoS₂ are economically fabricated on the carbon film of SPCE. As a result, the modified electrode showed exceptional electrocatalytic ability towards catechol, and the redox peak current is associated with the concentrations of catechol. It holds more extensive working range between 25 nM and 1265 μM, and it possesses a very low limit of detection as well as the appreciable sensitivity. This method is successfully applied to the detection of catechol in drinking and river water samples.

Keywords: Prussian blue cubes; MoS₂ flowers; catechol; water pollutant; organic toxic

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