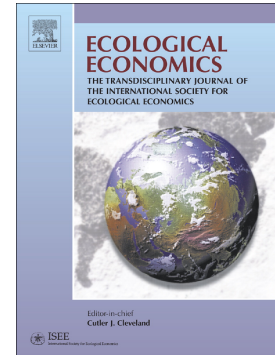


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Facile One-pot Synthesis of Fluorinated Graphene Oxide for Electrochemical Sensing of Heavy Metal Ions

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Abstract

Doping and functionalization could significantly assist in the improvement of the electrochemical properties of graphene derivatives. Herein, we report a one-pot synthesis of fluorinated graphene oxide (FGO) from graphite. The surface morphology, functionalities and composition of the resulting FGO have been studied using various surface characterization techniques, revealing that layer-structured nanosheets with ~1.0 at.% F were formed. The carbon bound F exhibited semi-ionic bonding characteristic and significantly increased the capacitance of FGO compared to GO. Further, the FGO has been employed for the simultaneous detection of heavy metal ions Cd^{2+} , Pb^{2+} , Cu^{2+} and Hg^{2+} using square wave anodic stripping voltammetry; and a substantial improvement in the electrochemical sensing performance is achieved in comparison with GO.

Keywords: graphene oxide; fluorine doping; heavy metal ions; electrochemical sensor.

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