

Supplementary Materials: Preparation of Highly Dispersed Reduced Graphene Oxide Modified with Carboxymethyl Chitosan for Highly Sensitive Detection of Trace Cu(II) in Water

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The preparation of graphene oxide (GO): Graphite oxide was prepared from natural graphite powder by a modification of Hummers. In brief, 1.0 g of graphite powder and 30 mL of sulfuric acid were added into a reaction vessel in a dry ice bath, and stirred gently for 6 h. Then, 3.0 g of potassium permanganate was added slowly with vigorous stirring. The reaction was allowed to proceed at below 20 °C for 30 min and at 35 °C for 30 min. Then, 30 mL of deionized water was added into the reaction vessel slowly, and the reaction was kept at ~95 °C for 35 min. Finally, 140 mL of deionized water and 10 mL of 30% hydrogen peroxide were added into the reaction vessel to finish the reaction. The resulting graphite oxide was filtered and washed using 5% hydrochloric acid and deionized water to remove the free SO_4^{2-} . The graphite oxide was suspended in the deionized water, and exfoliated through ultrasonication for 3 h. The colloidal solution was centrifuged at the speed of 5000 rpm for 10 min to remove the unexfoliated graphite oxide. The yellow-brown upper solution was graphene oxide, which must be dialyzed and freeze dried.