

Adsorption of toxic metal ions onto magnetic graphene oxide

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Abstract

A composite with magnetic properties was synthesized in situ by oxidative hydrolysis of Fe^{+2} ions on the surface of graphene oxide in aqueous dispersion under mild reaction conditions. The synthetic route is simple and could be easily scalable. Analyses by different analytical techniques (Raman and Infrared spectroscopy, scanning electron microscopy, X-ray diffraction) revealed that the functionalization was carried out effectively and some structural characteristics of this material ($\text{Fe}_3\text{O}_4@\text{GO}$) were determined. After being characterized, the composite was used to adsorb toxic metals ions in water. The results indicate a good adsorption capacity and the composite can be removed easily in the post-treatment by applying an external magnetic field as generated by a conventional magnet. The magnetic material could find potential applications in treatment of water pollution.

References

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Figures

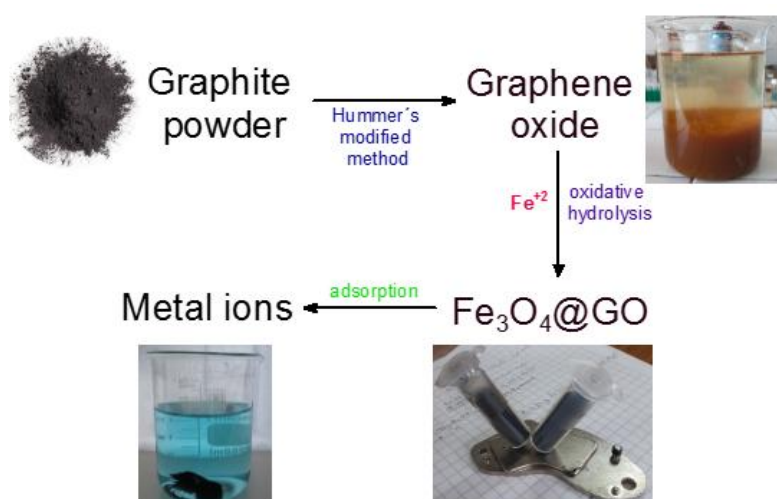


Illustration of the synthesis process and application of $\text{Fe}_3\text{O}_4@\text{GO}$