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Introduction of benzotriazole into graphene oxide for highly selective coadsorption of An and Ln: facile synthesis and theoretical study

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Abstract

The removal of actinide (An) and lanthanide (Ln) elements from aqueous solution is a significant strategy for the safe disposal of radioactive wastes. Herein we presented a 5-methylbenzotriazole modified graphene oxide (MBTA-GO) as a novel adsorbent, in which benzotriazole group was used as targeted sorption site bearing strong affinity toward An-Ln (An and Ln) ions for the first time. MBTA-GO was characterized by Fourier transformed infrared spectroscopy (FT-IR), thermal gravimetric analysis (TGA) and X-ray photoelectron spectroscopy (XPS). The effect of pH and initial concentration on combined adsorption of An-Ln were examined, and the results showed that the adsorption of metal ions on MBTA-GO was strongly

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