

Magnetic Graphene Oxide Decorated with Crown Ethers as Recyclable Lithium Adsorbent

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A composite adsorbent was synthesized and utilized for lithium recovery. The graphene oxide (GO) has magnetic functionality for easy separation and crown ethers (CE) for lithium adsorption. The magnetite-GO-CE composites were characterized by transmission electron microscopy (TEM), Raman spectroscopy and Fourier transformed infrared (FTIR) spectroscopy. Adsorption tests in solutions with pure Li⁺ and Li⁺ in the presence of other metal ions were performed. Efficient adsorption of lithium from aqueous solutions to magnetite-GO-CE composite suggested the suitability of the prepared composite in the recovery of lithium from seawater. The developed adsorbent can be easily separated magnetically, which suggested its reusability. This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Ministry of Science, ICT & Future Planning (No. 2012R1A2A1A01009683) and the Ministry of Education (No. 2009-0093816).