

Clicking Crown Ether–decorated Graphene Oxide and Magnetite Together: A Composite Adsorbent for Lithium Ion Recovery

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A composite adsorbent was synthesized for selective lithium ion recovery. The adsorbent contains crown ether (CE) as lithium ion specific ionophore, magnetite for adsorbent separation and recyclability, and graphene oxide (GO) as support material for the CE and magnetite. The synthesized adsorbent was characterized by TEM, XRD, FT-IR, Raman spectroscopy, TGA, AFM, EDX Spectrometry, Adsorption and Recyclability performance. Integration of magnetite with CE-decorated GO allowed the easy separation and recyclability of the adsorbent. Efficient adsorption of lithium ion from aqueous solution using the magnetite–GO–CE composite adsorbent suggested the suitability of the material in the selective recovery of the lithium ion. This work was supported by the Basic Science Research Program through the National Research Foundation of Korea (NRF) grant funded by the Ministry of Education (No. 2009-0093816).