

### H<sub>2</sub>MnO<sub>3</sub> adsorbent for the recovery of Lithium from seawater

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Adsorbent (H<sub>2</sub>MnO<sub>3</sub>) prepared from dilithium dioxido(oxo) manganese by acid treatment with 2.5 N H<sub>2</sub>SO<sub>4</sub> at 75°C for 24 hr was investigated for lithium recovery. The precursor was synthesized by solid-state reaction between Li<sub>2</sub>CO<sub>3</sub> and MnCO<sub>3</sub> at 450°C. The materials were characterized by elemental analysis, powder X-ray diffraction, Field Emission Scanning Electron Microscopy and BET surface area. The adsorption capacity (Q<sub>Li+</sub>) of H<sub>2</sub>MnO<sub>3</sub> was significantly increased as the initial pH and Li<sup>+</sup> concentration of solution were increased. The equilibrium distribution coefficients of metal ions between the seawater and H<sub>2</sub>MnO<sub>3</sub> followed the order: K<sup>+</sup> < Na<sup>+</sup> < Ca<sup>2+</sup> < Mg<sup>2+</sup> < Sr<sup>2+</sup> < Li<sup>+</sup>. The fabricated H<sub>2</sub>MnO<sub>3</sub> was found to be a potential adsorbent for Li<sup>+</sup> extraction from seawater. 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).