

Selection of Organic Leaching Agent for the Desorption of Li<sup>+</sup> from Poly (acrylonitrile)/Manganese Oxide Nanofibrous Membrane

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This study evaluates the performance of N,N',N'-tetramethylethylenediamine (TEMED) and ethylenediaminetetraacetic acid (EDTA) in leaching Li<sup>+</sup> ions from saturated poly (acrylonitrile)/manganese oxide (PAN/MO) nanofibrous membrane. Mineral acids, H<sub>2</sub>SO<sub>4</sub>, HCl and HNO<sub>3</sub> at 2.5 N concentration each, were already tested. HCl exhibited the highest Li<sup>+</sup> extraction and eluted Mn. However, low Mn elution is commensurate with preserved structural stability of MO; hence H<sub>2</sub>SO<sub>4</sub> was chosen as the best acid leaching solution over HCl. The optimum organic chelant between TEMED and EDTA would be determined per the Li<sup>+</sup> extraction and Mn elution capacities at several adsorption-desorption cycles. This work is 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).