Electrospun Poly(acrylonitrile)/Manganese Oxide Nanofibers for the Adsorptive Filtration of Lithium from Seawater

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Electrospun poly(acrylonitrile)/manganese oxide (PAN/MO) nanofiber (NF) sheets were employed as adsorbent filters to recover Li^+ ions from seawater. The performance of the membrane was assessed through adsorption breakthrough experiments at varying feed concentration, flow rate, and NF thickness. Higher feed concentrations and flow rates increased adsorption rates dramatically, which resulted in steep breakthrough curves. This is in contrast to the results when thicker NF was used, which reduced the Li^+ adsorption rates and prolonged the membrane saturation times. Reusability experiment is being conducted under optimum operating conditions. This work is funded by the Ministry of Science, ICT & Future Planning (No. 2012R1A2A1A01009683) and the Ministry of Education (No. 2009-0093816).