Preparation of Li1.6Mn1.6O4/polymeric composite nanofiber membranes and its application with fixed-bed adsorption for Li+ recovery from seawater

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Various polymeric materials have been used as membranes and support matrices due to their convenient handling, low cost and suitable properties. Particularly, the thermally and chemically stable polymers such as polysulfone (PSf) and polyacrylonitrile (PAN) are excellent supports for other valuable materials like adsorbents and catalysts. In this study, PSf and PAN were used as binders to prepare composite nanofiber membranes containing Li1.6Mn1.6O4 adsorbents which can selectively adsorb lithium ions. Promising lithium adsorption performances were revealed by fixed-bed adsorption studies. 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).