

Polyacrylonitrile(PAN) nanofiber with $H_{1.6}Mn_{1.6}O_4$ inorganic adsorbent for Li^+ recovery from seawater

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Polyacrylonitrile (PAN) was used as a nanofiber support of the inorganic adsorbent manganese oxide ($H_{1.6}Mn_{1.6}O_4$) for Li ions recovery from seawater. The adsorbent was an acid-treated $Li_{1.6}Mn_{1.6}O_4$ from a thermally-treated (450oC for 4 hrs) $LiMnO_2$ precursor. The composite nanofibers were prepared by dispersing $H_{1.6}Mn_{1.6}O_4$ in PAN dope solution via electrospinning method. The nanofibers were characterized in terms of their physical properties (CFP), morphologies (SEM) and mechanical stabilities (UTM). Adsorption experiments in simulated solutions and seawater demonstrate the potential of the developed composite nanofibers for selective Li^+ sequestration. 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).