

Recyclable polyvinyl alcohol (PVA)– $H_{1.6}Mn_{1.6}O_4$ composite foam for Li^+ recovery

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Novel PVA-HMO($H_{1.6}Mn_{1.6}O_4$) composite foams were produced via environmentally benign cryo-dessication method. The foams were prepared by frothing the components in de-ionized water, freeze-drying then cross-linking in glutaraldehyde. The PVA-HMO composites exhibited good contact with the Li^+ solution and consequently resulted in good Li^+ uptake, with minimal reduction as compared to the support-free HMO. Adsorption performance improved at higher HMO loading; at 200%, a good balance of high adsorption capacity and good mechanical stability was achieved. Overall results demonstrate that the PVA-HMO composite foam can be repeatedly used for effective Li^+ recovery. This work was funded by the Ministry of Science, ICT & Future Planning(No. 2012R1A2A1A01009683) and Education(No. 2009-0093816).