Adsorption Studies of Lithium Ions onto 14-Membered Crown Ether-Clicked on Poly(Glycidyl Methacrylate) Nanofibers

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The efficiency of 14-membered crown ether-clicked on poly(glycidyl methacrylate) (PGMA-CE) nanofibers (NF) was investigated for Li^+ capture. Adsorption studies at varied Li^+ concentrations (7~70 mg/L), pH=11 and solid/liquid ratio of 1.25 mL/mg reveal its Langmuir-type Li^+ adsorption. The PGMA-CE NF was highly selective towards Li^+, against other cations like Na^+, Mg^{2+}, Ca^{2+} and Sr^{2+}; the uptake followed the sequence: $Li^+ > Na^+ > K^+ > Mg^{2+} > Ca^{2+} > Sr^{2+}$. These results indicate the potential of PGMA-CE NF as a highly effective Li^+ adsorbent. This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT and future Planning (2015R1A2A1A15055407).