

Synthesis of Lithium Selective Extractant and its Application in Liquid-Liquid Extraction for the Recovery of Lithium Ions in Dilute Solutions

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Crown ethers with 14 membered rings are known to have high complexation stability towards lithium ions. Di-hydroxy-14-Crown-4 ether derivatives were functionalized with long alkyl chain and carboxylic acid functional group by oxidation and etherification reactions. The long alkyl chain imparted lipophilicity and enhanced solubility of the crown ether in the organic phase whereas the carboxylic acid functional group facilitated the transport of lithium ions towards the organic phase via ion exchange, by serving as a proton ionizable side-arm. The effects of crown ether loading and pH were investigated for optimum lithium extraction. The structures of the synthesized compounds were confirmed by NMR (^1H , ^{13}C) and elemental analysis. 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).