



Concentration of ionic liquids from aqueous ionic liquids solution using electro dialyzer

Hong Meng, Ling Xiao, Liangshi Li, Chunxi Li*

College of Chemical Engineering, Beijing University of Chemical Technology, Beijing, 100029, P.R.China

Fax: 86-10-64410308; email: licx@mail.buct.edu.cn

Received 3 September 2010; Accepted 3 January 2011

ABSTRACT

Ionic liquids (ILs) have great potential for industrial use as green alternative solvents. However, the high price of ILs restricts their applications. Since ILs are easily lost in its application process, it is necessary to seek for an effective approach to recover and concentrate ILs from ILs/water mixtures. In this paper, an electro dialysis (ED) process was proposed to concentrate the model ionic liquids of 1-butyl-3-methylimidazolium chloride ([BMIM]Cl). It was demonstrated that ILs could be successfully concentrated from aqueous ILs solution using the permselectivity of ion exchanges membranes under DC electric field. The structure of the products was identified with ¹H NMR. The effects of applied voltage and flow rate were intensively investigated. The experimental results showed that the increase in applied voltage and the decrease in flow rate would lead to the better performance of ED cell.

Keywords: Ionic liquids; Electro dialysis; Concentration; Voltage; Flow rate; Energy consumption

*Corresponding author.