Transport of Pb(II) by supported liquid membrane containing p-tert-butyl calix[4]amine derivative as carrier

Ahmet Kayaa, Tugba Kutlua, Aysen Hol, Ahmet Surucub, Hamza Korkmaz Alpoguz

aDepartment of Chemistry, Pamukkale University, 20017 Denizli, Turkey
Tel. +90 258 296 3600; Fax: +90 258 296 3535; email: hkalpoguz@pau.edu.tr
bEducation Faculty of Pamukkale University, 20017 Denizli, Turkey

Received 20 March 2012; Accepted 22 April 2013

ABSTRACT

Facilitated transport of Pb(II) ions in acidic medium, across a supported liquid membrane (SLM) by using 5,11,17,23-tetra-tert-butyl, 25,27-bis(benzylamino etoxy)-26,28-dihydroxycalix[4]arene as carrier, dissolved in kerosene, has been investigated. The parameters studied are Pb(II) ions concentration in the feed phase, HCl concentration in the stripping phase, and solvent effect in the membrane phase. The Celgard 2500 membrane was used as the solid support. A Danesi mass transfer model was used to calculate the permeability coefficients for each parameter studied. Also, AFM technique and contact angle measurements were used to characterize the surface morphology of the prepared Celgard 2500-carrier 1 SLM.

Keywords: Facilitated transport; Supported liquid membrane; Pb(II) transport; Calixarene