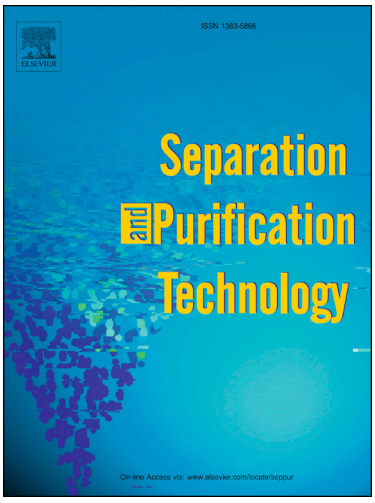

Ionic Liquid-Modified Mesoporous Silica Stationary Phase for Separation of Polysaccharides with Size Exclusion Chromatography

Yu Ri Lee, Kyung Ho Row

PII: S1383-5866(17)31007-9
DOI: http://dx.doi.org/10.1016/j.seppur.2017.08.041
Reference: SEPPUR 13983

To appear in: *Separation and Purification Technology*

Received Date: 31 March 2017
Revised Date: 2 August 2017
Accepted Date: 16 August 2017

Please cite this article as: Y. Ri Lee, K. Ho Row, Ionic Liquid-Modified Mesoporous Silica Stationary Phase for Separation of Polysaccharides with Size Exclusion Chromatography, *Separation and Purification Technology* (2017), doi: http://dx.doi.org/10.1016/j.seppur.2017.08.041

Ionic Liquid-Modified Mesoporous Silica Stationary Phase for Separation of Polysaccharides with Size Exclusion Chromatography

Yu Ri Lee and Kyung Ho Row*

Department of Chemistry and Chemical Engineering, Inha University, Incheon 402-751, Korea

Tel: +82-32-860-7470; Fax: +82-32-872-0959

E-mail: rowkho@inha.ac.kr

Abstract

Size exclusion chromatography (SEC) was developed for the separation of large molecules, such as proteins, polymer, peptides, nucleic acid, and polysaccharides. In this study, ionic liquid-modified silica was synthesized to examine the retention behavior of polysaccharides, such as dextran, fucoidan, alginic acid, and laminarin. Commercial SEC column separated large molecules according to their molecular size. However, Ionic liquid-modified silica is expected to retention behavior by the functional group between ionic liquid-modified silica surface with polysaccharides. The SilprBimCl column has larger retention than the other ionic liquid-modified silica columns owing to the large pore size and specific physical and chemical properties of the ionic liquids. 2.93 was the largest retention factor in SilprBimCl column from 5 kDa dextran. Under the SilprBimCl column, the molecular weights of fucoidan, alginic acid and laminarin were 205, 245, and 7~650 kDa respectively.

Keywords: Size exclusion chromatography; Retention factor; Ionic liquid-modified silica; dextran; polysaccharide