

## Ionic liquid-modified silica as stationary phase for HPLC separation

노경호\*, 엄홍원, 만효룡  
인하대학교  
(rowkho@inha.ac.kr\*)

A new zwitterionic stationary phase based on silica bonded with 1-methyl-3-propylimidazolium chloride was synthesized and characterized in this paper. The derivatives 1-methyl-3-propylimidazolium chloride was used to modify the surface of 15  $\mu\text{m}$  diameter silica particles to act as the stationary phase for HPLC. The modified particles were characterized by Fourier Transform Infrared (FT-IR) thermogravimetric analysis (TGA) and  $^{13}\text{C}$  NMR spectroscopies. The surface modification procedure rendered particles with a surface coverage of  $0.89 \mu\text{mol}\cdot\text{m}^{-2}$  for the alkyimidazolium chloride. Columns packed with the modified silica and silica materials were tested under HPLC conditions. Preliminary evaluation of the stationary phase for HPLC was performed using aromatic carboxylic acids as model compounds. The separation mechanism appears to involve multiple interactions including ion exchange, hydrophobic interaction, and other electrostatic interactions.