

## Characteristic of Monolithic Imprinted Column and Its Application for Separation of Xanthine Derivatives

노경호\*, Hongyuan Yan

인하대학교

(rowkho@inha.ac.kr\*)

Monolithic molecularly imprinted columns were designed and prepared for rapid separation xanthine derivatives caffeine, theobromine and theophylline by in-situ thermal-initiated copolymerization technique. Molecular recognition was found to be dependent on the stereo structures and the arrangement of functional groups of the imprinted molecule and the cavities on MIP. Some chromatographic conditions such as the composition of the mobile phase and the temperature were investigated and hydrogen bonding interaction and hydrophobic interaction played an important role in the retention and separation. Thermodynamic data ( $\Delta\Delta H$  and  $\Delta\Delta S$ ) obtained by Van't Hoff plots revealed an enthalpy-controlled separation. The morphological characteristics of the monolithic MIP were investigated by scanning electron microscope, which showed that both mesopores and macropores were formed in the monolith. The presents method is very simple compared with the conventional MIP procedure and its macroporous structure has excellent separation properties.