

Preparation of molecularly imprinted submicron/nanoscale beads for chiral resolution of phenylalanine racemate solution

Nasrullah Shah, Mazhar-ul-Islam, 하정환, 박중곤*
경북대학교 화학공학과
(Parkjk@knu.ac.kr*)

Molecularly imprinted polymers (MIPs) have been produced for applications in vitro diagnostics, therapeutics and separations. Recent developments in the area of MIP nanoparticles might offer solutions to several problems associated with performance and application. MIP submicron/nanoscale beads selective for L-Phenylalanine (L-Phe) and D-Phe as well as non-imprinted beads were prepared by modified suspension polymerization involving agitation of the reaction mixture at high rotation speed under safe radical conditions. The adsorption capacity and selectivity of L-Phe imprinted submicron/nanoscale beads were higher than the adsorption capacity and selectivity of D-Phe imprinted and non-imprinted submicron/nanoscale beads. FE-SEM analyses showed that the presence of template had caused greater effect on the beads sizes. L- and D-Phe imprinted beads were larger in size (100nm~1.5 μ m) than non-imprinted nanobeads (100nm~800nm). FT-IR study revealed the structural characteristics of the prepared Phe imprinted and non-imprinted beads.