化学学报 2000 58 (3): 351-355 ISSN: 0567-7351 CN: 31-1320/06

功能单体对分子烙印手性固定相手性拆分能力的影响

王进防,周良模,刘学良,王清海,朱道乾

中国科学院大连化学物理研究所.大连(116012)

收稿日期 修回日期 网络版发布日期 接受日期

摘要 系统考察了功能单体对非共价分子烙印手性固定相手性分离能力的影响,发现在非共价分子烙印手性固定相的制备中,功能单体与烙印分子之间存在着匹配性。丙烯酰胺可以与氨基酸衍生物的酰胺基团形成较强的氢键作用,碱性功能单体2-乙烯基吡啶则与其羧基形成较离子作用,两者的协同作用使复合功能单体丙烯酰胺+2-乙烯基吡啶对于氨基酸衍生物具有良好的烙印效果。竞争溶剂乙酸对样品与分子固定相间的非共价作用力有较大的影响,增加流动相中的竞争溶剂乙酸的含量,将减弱分子手性固定相与样品的酰胺键和羧基的氢键及离子作用,导致对样品的容量因子、手性选择性α及分离度f/g的减小。

关键词 氨基酸 分子烙印 高聚物 固定相 消旋体拆分 功能性高聚物 丙烯酰胺 吡啶P

分类号 064

Effect of functional monomer on chiral separation ability of molecular imprinted chiral stationary phase

Wang Jinfang,Zhou Liangmo,Liu Xueliang,Wang Qinghai,Zhu Daoqian

Dalian Inst Chem Phys, CAS.Dalian(116012)

Abstract The effect of functional monomer on chiral separation ability of the non-covalent molecular imprinted chiral stationary phase was investigated systematically. It was found that there was compatibleness between the functional monomer and the template molecules. Strong hydrogen bond and ionic interaction could be formed betweent he amide group and carboxyl group in the amino acid derivatives and acrylamide and 2-vinylpyridine, which made the imprinting effect of the combined functional monomers AM+2-VP more evident. The competing solvent acetic acid showed great influence on the non-covalent interaction between the analyte and the functional groups of molecular imprinted polymer (MIP). Ionic interaction and hydrogen bonding between amide group and carboxyl group in the analyte and the functional groups of MIP were weakened by increasing the concentration of the competing solvent acetic acid, therefore both the capacity factor, chiral selectivity factor and resolution decreased.

Key words AMINO ACID HIGHPOLYMER STATIONARY PHASE MESOTOMY FUNCTIONAL POLYMER PROPENAMIDE PYRIDINE P

DOI:

通讯作者