

研究论文

单分散亲水两性离子交换树脂的制备及其在生物大分子分离中的应用

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**摘要** 采用分散聚合与溶胀聚合相结合的方法及高分子溶液致孔技术, 成功地制备了粒径为5.0 μm大孔和超大孔结构的单分散亲水性交联聚甲基丙烯酸环氧丙酯树脂, 并进行了结构表征. 将该树脂经胺化后再与1,3-丙磺酸内酯反应, 得到一种新型的两性离子交换(强阳-强阴型)高效液相色谱填料. 研究了该填料对标准蛋白分离性能及流动相中有机溶剂、流速和pH值对蛋白保留的影响. 实验结果表明, 在流速为3 mL/min时, 采用线性梯度洗脱, 在4.0 min内可同时快速基线分离3种酸性和2种碱性蛋白.

**关键词** [单分散亲水性交联聚甲基丙烯酸环氧丙酯树脂](#) [两性离子交换填料](#) [蛋白质分离](#)

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Preparation of Zwitterionic Ion Exchange Packings Based on Monodisperse Hydrophilic Macroporous Resins and Their Application to Separation of Proteins

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**Abstract** Monodisperse, macroporous hydrophilic poly(glycidylmethacrylate-co-ethylene dimethacrylate) particles with a diameter of 5.0 μm were prepared *via* a one-step swelling method combined with dispersion polymerization and technique of polymeric solution porogens, then they were characterized with various measurements. The resins were modified to be strong/strong zwitterionic stationary phase for high performance liquid chromatography(HPLC) in the following steps. First, a tertiary amine was introduced on the particles by dimethylamination, followed by quaternizing sulfoalkylation with 1,3-propane sultone. The zwitterionic ion exchange stationary phase was evaluated in light of the separability and hydrophilicity on the separation and retention of standard proteins in detail. Three acid proteins and two basic ones were quickly separated in 4.0 min with 3 mL/min linear gradient elution by using the synthesized zwitterionic ion exchange stationary phase.

**Key words** [Monodisperse macroporous hydrophilic polymeric beads](#); [Zwitterionic ion exchange packings](#); [Proteins separation](#)

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