

论文

光聚合法快速制备甲基丙烯酸酯类毛细管整体柱

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摘要:

采用甲基丙烯酸正丁酯(BMA)为功能单体, 乙二醇二甲基丙烯酸酯(EDMA)为交联剂, 正丙醇、1,4-丁二醇和水为致孔剂, Irgacure 1800为引发剂, 在毛细管内采用光引发原位聚合150 s快速制备了有机聚合物整体柱. 分别采用电色谱(CEC)、加压电色谱(*p*-CEC)和低压色谱(LPLC)模式对所制备的整体柱进行了性能评价, 基线分离了硫脲、甲苯、萘和联苯, 在加压电色谱(*p*-CEC)模式下硫脲的最低理论塔板高度达到了8.0 μm. 扫描电镜结果表明, 整体材料在毛细管柱中形成并与毛细管内壁结合紧密.

关键词: 光聚合 整体柱 加压电色谱 甲基丙烯酸酯

Rapid Preparation of Methacrylate Capillary Monolithic Columns by Photopolymerization

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Abstract:

An organic-based monolithic column was quickly prepared inside the fused-silica capillary, and *in situ* photopolymerization was carried out in 150 s, using butyl-methacrylate(BMA) as a functional monomer, ethylene glycol dimethacrylate(EDMA) as a cross-linking agent, 1-propanol, 1,4-butanediol and water as porogenic solvents and Irgacure 1800 as an initiator. The electrophoretic and chromatographic behavior was comparatively evaluated using pressure-assisted CEC(*p*-CEC), CEC and low pressure-assisted liquid chromatography modes(LPLC). Baseline separation of the model analytes was respectively achieved including thiourea, toluene, naphthalene and biphenyl with the lowest theoretical height up to 8.0 μm for thiourea in the mode of *p*-CEC. A scanning electron micrograph of a cross-section of the capillary column shows that the monolithic columns were formed in the center of the capillary and adhered to the column inner wall.

Keywords: Photopolymerization Monolithic column Pressure-assisted electrochromatography Methacrylate

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参考文献:

1. Svec F., Huber C. G.. Anal. Chem.[J], 2006, 78: 2100—2107
2. PING Gui-Chen(平贵臣). Research on Polymer Monolithic Stationary Phases for Capillary Electrochromatography[D], Dalian: Dalian Institute of Chemical Physics, Chinese Academy of Science, 2003
3. ZHANG Yu-Ping(张裕平), ZUO Guo-Qiang(左国强), XU Guang-Ri(许光日), *et al.*. Chem. J. Chinese Universities(高等学校化学学报)[J], 2007, 28(8): 1445—1447
4. Zhang Y. P., Gong W. J., Zhang Y. J., *et al.*. Microchimica Acta[J], 2007, 158: 353—360
5. Lee D., Svec F., Fréchet J. M. J.. J. Chromatogra. A[J], 2004, 1051: 53—60
6. Eeltink S., Herrero-Martinez J. M., Rozing G. P., *et al.*. Anal. Chem.[J], 2005, 77: 7342—7347
7. YANG Jun-Jiao(杨俊佼), ZHANG Kai(张锴), GAO Ru-Yu(高如瑜), *et al.*. Chem. J. Chinese Universities(高等学校化学学报)[J], 2004, 25(9): 1654—1656
8. Sondergeld L. J., Bush M. E., Bellinger A., *et al.*. J. Chromatogra. A[J], 2003, 1004: 155—165
9. Jiang T., Jiskra J., Claessens H. A., *et al.*. J. Chromatogra. A[J], 2001, 923: 215—227
10. Gong W. J., Zhang Y. J., Zhang Y. P., *et al.*. Chin. Chem. Lett.[J], 2006, 17: 813—815

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1. 刘晓暄, 荆燕妮, 白迎坤, 吴光国. 甲基丙烯酸甲酯的可控/“活性”细乳液光聚合[J]. 高等学校化学学报, 2007,28(4): 774-778
2. 蒋希, 田仁玉, 莫越奇, 曹镛. 含噻吩单元的硅芴共聚物的合成及其蓝色电致发光性能[J]. 高等学校化学学报, 2007,28(8): 1586-1592
3. 张裕平, 左国强, 许光日, 李全民, 袁倬斌. 微波聚合快速制备分子印迹毛细管电色谱整体柱[J]. 高等学校化学学报, 2007,28(9): 1654-1656
4. 刘祥军, 刘吉众, 赵睿, 刘国诠, 陈义. 三甲氧基苯胺分子印迹整体柱的制备及色谱性能[J]. 高等学校化学学报, 2007,28(10): 1878-1880
5. 黄剑莹, 邹友思. TEMPO调控下的苯乙烯光聚合[J]. 高等学校化学学报, 2008,29(8): 1689-1693
6. 石伟, 曾文进, 王磊, 张勇, 杨伟, 曹镛. 胺烷基侧链取代三苯胺类红光聚合物的合成及性能研究[J]. 高等学校化学学报, 2009,30(4): 800-805

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