

原子转移自由基聚合技术用于以单分散树脂为基质的温敏色谱固定相的制备

欧阳康龙, 曹颖, 王富强, 龚波林*

宁夏大学能源化工重点实验室, 宁夏 银川 750021

Monodisperse thermo-sensitive chromatographic stationary phase prepared by atom transfer radical polymerization and its chromatographic properties

OUYANG Kanglong, CAO ying, WANG Fuqiang, GONG Bolin*

1. Key Laboratory of Energy & Chemical Engineering, Ningxia University, Yinchuan 750021, China

摘要	参考文献	相关文章
----	------	------

Download: PDF (200KB) HTML 0KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 以 α -溴异丁酰溴为引发剂,CuCl/CuCl₂/2,2'-联吡啶(Bpy)为催化体系,在室温条件下通过原子转移自由基聚合(ATRP)使N-异丙基丙烯酰胺(NIPAM)键合在单分散交联聚甲基丙烯酸环氧丙酯树脂(PGMA/EDMA 树脂)表面,制备了具有温敏性的聚合物色谱填料,并用元素分析对其进行了表征;详细考察了该填料对芳香烃化合物的分离性能、温敏性能、稳定性和重现性。元素分析得出NIPAM单体的接枝率为10.4%;通过改变温度,可以有效地分离对羟基苯甲醛、邻甲酚和4-丁基苯胺3种混合物。结果表明,所合成的固定相具有很好的色谱性能,稳定性和重现性良好。

关键词: 原子转移自由基聚合法 N-异丙基丙烯酰胺 温敏固定相 色谱性能 制备

Abstract: The new monodisperse thermo-sensitive stationary phase was prepared by atom transfer radical polymerization method at room temperature using α -bromo-isobutyryl bromide as an initiator, and the organic compound formed in the CuCl/CuCl₂/Bpy system as a catalyst. The stationary phase was characterized by elemental analysis and Fourier transform infrared (FTIR) spectroscopy and evaluated in detail to determine its separability, thermosensitivity, stability and reproducibility. The grafting yield of the N-isopropylacrylamide on the surface of poly(glycidyl methacrylate-co-ethylene dimethacrylate) (PGMA/EDMA) beads is 10.4%, and the stationary phase can effectively separate 4-hydroxy benzaldehyde, o-cresol and 4-n-butylaniline by changing temperature. Results showed that the synthesized stationary phase has satisfactory chromatographic properties, thermosensitive properties and reproducibility.

Keywords: atom transfer radical polymerization (ATRP) N-isopropylacrylamide thermo-sensitive stationary phase chromatographic properties preparation

Received 2009-11-17; published 2010-06-28

Corresponding Authors: 龚波林

引用本文:

欧阳康龙,曹颖,王富强,龚波林*.原子转移自由基聚合技术用于以单分散树脂为基质的温敏色谱固定相的制备及性能评价[J] 色谱, 2010, 28(6): 551-555