液晶与显示
中文核心期刊
Chinese Journal of Liquid Crystals and Displays
主管：中国科学院
主办：中国科学院长春光学精密机械与物理研究所
中国物理学会液晶分会
中国光学光电子行业协会液晶分会
主编：郭海成

液晶与显示 2011, 26(1) 1-4 ISSN: CN:

材料物理和化学

宽发射聚芴衍生物的合成及其光谱特性

杜渭松, 高潮, 邱少君

西安近代化学研究所 光电材料事业部,陕西 西安 710065

摘要： 利用Stille偶联聚合反应,将二溴苯并噻二唑、2,5-二噻吩双三丁基锡、9,9-二辛基2,7-二溴芴进行聚合,得到了一种在可见光区具有宽发射范围的三元共聚物,该聚合物的发射光谱涵盖了整个可见光区,发光峰位于470.7,498.9,654.2 nm,具有成为单层聚合物白光材料的潜力。

关键词： 宽发射 聚芴 三元共聚物 光谱性能

Synthesis and Optical Spectral Properties of Polyfluorene Derivative with Broad Emission

DU Wei-song, GAO Chao, QIU Shao-jun

Xi'an Modern Chemistry Research Institute, Xi'an 710065,China

Abstract: A conjugated polyfluorene copolymer with broad emission in the visible region was synthesized by Stille coupling reaction through the polymerization between 2,5-bis(tributylstannyl) thiophene, 4,7-dibromo-2,1,3-benzothiadiazole and 2,7-dibromo-9,9-dioctylfluorene. The obtained copolymer possessed of broad emission spectrum in visible region with the peak of 470.7, 498.9, 654.2 nm, indicating the potential application in polymer white emission materials.

Keywords: broad emission polyfluorene copolymer optical spectral property

收稿日期 2010-07-07 修回日期 2010-08-04 网络版发布日期

基金项目:

国家自然科学基金(No. 60907012)

通讯作者:

作者简介: 杜渭松(1972-),男,河北丰南人,博士,高级工程师,主要从事液晶与OLED发光材料的研究工作。

作者Email: duweisong@sohu.com

参考文献：

[1] Burroughes J H, Bradley D D, Brown A R, *et al.* Light-emitting diodes based on conjugated polymers[J]. *Nature,* 199, 347(6293):539-541. [2] Zheng J R, He G F, Yang C H, *et al.* Synthesis and properties of alkyl-substituted poly(1,4-phenylenevinylene) derivatives[J]. *J. Appl. Polym. Sci.,* 21, 8(8):1299-134. [3] Zhou E J, Hou J H, Yang C H, *et al.* Synthesis and properties of polythiophenes with conjugated side-chains containing carbon-carbon double and triple bonds[J]. *J. Polymer Science:Part A: Polymer Chemistry,* 26, 44(7):226-2214. [4] Jiang J X, Jiang C Y, Yang W, *et al.* High-efficiency electrophosphorescent fluorene-alt-carbazole copolymers N-grafted with cyclometalated Ir complexes[J]. *Macromolecules,* 25, 38(1):472-48. [5] Yang W, Hou Q, Liu C Z, *et al.* Improvement of color purity in blue-emitting polyfluorene by copolymerization with dibenzothiophene [J]. *J. Mater. Chem.,* 23, 13(8):1351-1355. [6] Zhou Q M, Hou Q, Zheng L P, *et al.* Fluorene-based low band-gap copolymers for high performance photovoltaic devices[J]. *Appl. Phys. Lett.,* 24, 84(1):1653-1655. [7] Wang E G, Wang L, Lan L F, *et al.* High-performance polymer heterojunction solar cells of a polysilafluorene derivative[J]. *Appl. Phys. Lett.,* 28,92(3):3337(1-3). [8] Hou Q, Zhou Q M, Zhang Y, *et al.* Synthesis and electroluminescent properties of high-efficiency saturated red emitter based on copolymers from fluorine and 4,7-di(4-hexylthien-2-yl)-2,1,3-benzothiadiazole[J]. *Macromolecules,* 24, 37(17):6299-635. [9] 徐阳,王华,宋春丽,等. 一种近白光发射聚合物的合成与发光性能 [J]. 发光学报, 21, 31(2):274-279. [1] Guo X, Qin C J, Chen Y X, *et al.* White electroluminescence from a phosphonate-functionalized single-polymer system with electro-trapping effect[J]. *Adv. Mater.,* 29, 21(36):3682-3688. [11] Mei C Y, Ding J Q, Yao Bing, *et al.* Synthesis and characterization of white-light-emitting polyfluorenes containing orange phosphorescent moieties in the side chain[J]. *J. Polymer Science:Part A: Polymer Chemistry,* 27, 45 (9):1746-1757. [12] Wang Q, Ding J Q, Ma D G, *et al.* Manipulating charges and excitions within a single-host system to accomplish efficiency/CRI/color-stability trade-off for high-performance OWLEDs[J]. *Adv. Mater,* 29, 21(23):2397-241. [13] 丁桂英, 汪津, 王广德, 等. 基于rubrene掺杂剂的高亮度白色有机电致发光器件 [J]. 液晶与显示, 28, 23(1):5-1. [14] Huang J, Niu Y H, Yang W, *et al.* Novel electroluminescent polymers derived from carbazole and benzothiadiazole[J]. *Macromolecules,* 22, 35(16):68-682. [15] Hou J H, Huo L J, He C, *et al.* Synthesis and absorption spectra of poly(3-(phenylenevinyl) thiophene)s with conjugated side chains[J]. *Macromolecules,* 26, 39(2): 594-63. [16] Ranger M, Rondeau D, Leclerc M. New well-defined poly(2,7-fluorene) derivatives: photoluminescence and base doping[J]. *Macromolecules,* 1997, 3 (25):7686-7691.

本刊中的类似文章