

研究论文

外围带咔唑基的联苯桥联PPV齐聚物的稳定性

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摘要 设计合成了外围带咔唑基团的联苯桥联齐聚对苯撑乙烯撑衍生物, 用核磁共振氢谱、质谱和元素分析对其结构和纯度进行了表征. 热分析测试结果表明: 该化合物具有良好的化学结构稳定性和相态稳定性. 玻璃化转变温度为142.05 °C, 热失重开始温度为306 °C. 退火处理前后的旋涂薄膜的吸收光谱的性状和X射线衍射数据说明该化合物的固体薄膜为无定形薄膜, 而且高温下退火4 h没有明显变化. 研究结果表明, 以联苯桥联结构为中心, 外围修饰大体积的咔唑基团的分子设计不仅在减弱分子聚集和抑制 π - π 相互作用方面取得了良好效果, 而且保持了联苯桥联DSB衍生物的结构稳定性.

关键词 [联苯桥联](#) [咔唑](#) [固体薄膜](#) [热稳定性](#)

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Stability of a PPV Oligomer with Central Biphenyl Bridge and Peripheral Carbazole Substituents

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Abstract An oligo(phenylene vinylene) with central biphenyl bridge and peripheral carbazole functionalities was synthesized. The structure and purity were characterized by using ^1H NMR, MS and elementary analysis techniques. Thermal analysis data indicated that the obtained compound possessed both high chemical and morphological stability. The glass transition temperature was 142.05 °C; the mass-loss temperature started at 306 °C. The observed absorption features and X-ray diffraction patterns suggested an amorphous state of the spin-coating films, and the annealing treatment at 80 °C for 4 h did not change the amorphous property. The results above showed that the molecular design of introducing a central biphenyl bridge and bonding peripheral bulky carbazole functionalities can not only effectively decrease the aggregation of chromophores but also keep the stability of biphenyl bridged DSB derivatives.

Key words [Biphenyl bridge](#) [Carbazole](#) [Solid film](#) [Thermal stability](#)

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