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材料物理和化学

# 大分子引发剂的分子量对聚合物分散液晶的微观形貌影响

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摘要： 采用可逆加成-断裂链转移(RAFT)活性自由基聚合法制备了不同分子量的苯乙烯大分子引发剂(RAFT-PS),并通过紫外光聚合诱导相分离法制备聚合物分散液晶(PDLC)膜。研究了不同分子量的RAFT-PS对PDLC的微观形貌、光聚合动力学、液晶向列取向程度以及电光性能等方面的影响。研究表明,影响PDLC的微观形貌的关键因素是RAFT-PS的分子量,而不是聚合物基体分子量。通过调整RAFT-PS的分子量,能够有效控制液晶微滴粒径,进而改善PDLC的电光性能。

关键词： 大分子引发剂分子量 微观形貌 电光性能 聚合物分散液晶

# Effect of Molecular Weight of Macroinitiator on Morphology of Polymer Dispersed Liquid Crystal

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Abstract: The polymer dispersed liquid crystal (PDLC) films were prepared by photopolymerization induced phase separation with macroinitiator (RAFT-PS) of different molecular weight, synthesized by RAFT polymerization. The influences of molecular weight of RAFT-PS on morphology, photopolymerization kinetics, nematic fraction and electro-optical pro-perties of PDLCs had been investigated. It was found that the key factor of affecting morphology was not the molecular weight of polymer matrix and the rate of polymerization but the molecular weight of RAFT-PS. On the other hand, the diameter of liquid crystal droplets was effectively controlled by changing the molecular weight of RAFT-PS. This result contributed to improve electro-optical properties of PDLCs.

Keywords: molecular weight of macroinitiator morphology electro-optical properties polymer dispersed liquid crystal

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