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材料物理和化学

阻聚剂对聚合物分散液晶电光性能的影响

高峰^{1,3}, 钱俊¹, 刘慧慧¹, 唐超群², 刘锋³

1. 武汉大学 印刷与包装系, 湖北 武汉 430000;
2. 华中科技大学 物理学院, 湖北 武汉 430000;
3. 武汉大学 微电子与信息研究院, 湖北 武汉 430000

摘要: 将不同质量分数的阻聚剂对叔丁基邻苯二酚(TBC)添加到聚合物分散液晶(PDLC)中,采用聚合诱导分相法制备PDLC膜。通过扫描电镜观测PDLC的微观形貌,并采用图像处理和统计学的方法分析PDLC中液晶微滴的大小和分布,研究了阻聚剂对PDLC电光性能的影响。结果表明:阻聚剂对PDLC混合物的固化产生了延缓聚合作用,明显影响了PDLC膜中液晶微滴的大小和分布,降低了PDLC膜的关态透过率;当阻聚剂的添加量为0.5%时,PDLC膜电光性能最好,对比度达到23。

关键词: PDLC 阻聚剂 电光性能 图像处理

Effect of Polymerization Inhibitor on Electro-Optical Properties of Polymer Dispersed Liquid Crystal Films

GAO Feng^{1,3}, QIAN Jun¹, LIU Hui-hui¹, TANG Chao-qun², LIU Feng³

1. School of Printing and Packaging, Wuhan University, Wuhan 430000, China;
2. School of Physics, Huazhong University of Science and Technology, Wuhan 430000, China;
3. Institute of Microelectronics and Information, Wuhan University, Wuhan 430000, China

Abstract: For studying the effect of polymerization inhibitor on electro-optical properties of Polymer dispersed liquid crystal (PDLC) film, various mass fraction of polymerization inhibitor 4-tert-butylcatechol (TBC) were added into PDLC prepared by polymerization induced phase separation (PIPS). They were observed by scanning electron microscope, and the size and distribution of liquid crystal droplets were investigated based on image-processing and statistics. It shows that polymerization inhibitor delays the polymerization of PDLC mixture and dominates the size and distribution of liquid crystal droplets, and decreases the off-state transmittance of PDLC. When mass fraction of TBC is 0.5%, the PDLC has the best electro-optical properties, and its contrast is 23.

Keywords: polymer dispersed liquid crystals polymerization Inhibitor electro-optical properties image-processing

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通讯作者: 刘锋, E-mail: fengliu@whu.edu.cn

作者简介: 高峰(1989-),男,湖北随州人,硕士研究生,主要从事印刷光电子和柔性显示材料方面的研究。

作者Email: fengliu@whu.edu.cn

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