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器件物理及器件制备技术

蓝相液晶及其在微透镜器件中的应用

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摘要： 聚合物稳定蓝相液晶(PSBPLC)具有响应速度达到亚毫秒量级,偏振光独立及工艺无需取向工艺等特点,在显示技术及光电子器件领域有潜在的巨大应用空间。文章论述了PSBPLC微观相变模型、宏观克尔效应等特性。在此基础上,论述了蓝相液晶微透镜技术的发展。介绍了PSBPLC实现微透镜阵列的主要结构,包括圆孔电极的蓝相液晶透镜;曲面电极的蓝相液晶透镜;多电极蓝相液晶GRIN透镜;模式控制的蓝相液晶透镜,以及采用ZnO纳米棒为电极实现蓝相液晶透镜,对比了上述几种透镜的结构和特点。

关键词： 聚合物稳定蓝相液晶 克尔效应 微透镜

Blue Phase Liquid Crystals and Its Application in Microlens

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Abstract: Polymer-stabilized blue phase liquid crystals (PSBPLC) within wide temperature range attract many attentions, such as fast response time short as sub-millisecond, alignment-free and polarization independent. It has potential huge application for PSBPLC both in display technology and optical-electronic devices. The micro phase model and Kerr effect for PSBPLC were described.This paper introduced for PSBPLC development in microlens technology including main kinds of microlens structures such as BPLC microlens with hole pattern, adaptive BPLC microlens with curved electrode, BPLC GRIN microlens, BPLC microlens with resistive film and BPLC microlens with ZnO nano-rod electrode.

Keywords: polymer-stabilized blue phase liquid crystals kerr effect microlens

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