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Inorganic–Organic Photorefractive Hybrids

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Chapter
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Abstract

Organic hybrids, comprising polymers and liquid crystals, have been explored for photorefractive beam coupling and diffractive applications for almost two decades. The work presented in this chapter explores an alternative approach of using inorganic–organic hybrids, comprising space-charge field generating inorganic crystals as windows for liquid crystal cells. The primary advantages of the inorganic–organic hybrid approach, such as the ability to produce high-resolution gratings, are discussed. Experiments conducted to gain a fundamental understanding of the physical mechanisms leading to beam coupling with this technology are described in detail, as well as methods used to increase the gain coefficient of the devices; these methods include increasing the contribution from the flexoelectric effect and the incorporation of ferroelectric nanoparticles. A discussion on the ferroelectric nanoparticles themselves is also provided.

Keywords

Liquid Crystal Organic Hybrid CrystalCholesteric Liquid Crystal
Liquid Crystal Cell Liquid Crystal Molecule

These keywords were added by machine and not by the authors. This process is experimental and the keywords may be updated as the learning algorithm improves.

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