

Long pitch orthoconic antiferroelectric mixture for display applications

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Orthoconic Antiferroelectric Liquid Crystals (OAFLC) have been extensively studied due to their physical properties offering unique electrooptical properties¹. Practical implementation of this kind of liquid crystalline medium experiences many obstacles including a number of parasitic effects deteriorating the electrooptical performance². One of them is so called light leakage which originates, among the others, from remainders of helical structure of the OAFLC medium. In search for working OAFLC¹ a mixture with the helical pitch much more longer than the typical cell gap was formulated. Using this mixture a bookshelf structure with near perfect optical uniformity, providing excellent dark state at the zero electric field applied was easily obtained using standard cell with 1.5 μm cell gap. The physical and structural properties of a newly formulated mixture are presented and their parameters are discussed in context of molecular properties of the mixture components. The electrooptical performance as well as its dependence on the boundary conditions is presented and discussed.

References

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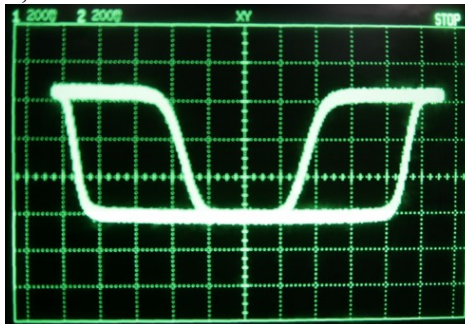


Figure. The light leakage free electrooptical response of a new long pitch OAFLC mixture deposited in standard 1.5 mm cell in birefractive set-up.