

Crysoptix low-cost technology for printable LCD retarders

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Crysoptix KK announced the development of printable lyotropic liquid crystal (LLC) materials for coating on glass or plastic substrates and producing LCD retarders with functions of biaxial B_A-plate, positive A-plate, and negative C-type plate. This advanced technology provides the alignment of the LLC materials with the slot-die coating process and does not require pre-formation of an alignment layer on the substrate surface. Molecular orientation achieved in a liquid layer is fixed in anisotropically ordered submicron Thin Birefringent Film (TBF™) retarders. The coated retarders can be laminated with dichroic polarizer.

A wide range of retarder products are available through Guest-Host LLC systems that allow the production of a variety of retarders from two basic materials at the formulation stage. Guest-Host LLC systems open up an excellent opportunity to produce retarders with anomalous dispersion that leads to broadband circular polarizers with high cost efficiency.

The printable LLC materials are applicable to the revolutionary technology of 3D display designs with patterned internal and external retarders. Coatable TBF retarders provide superior cost reduction for 2D and 3D LCD TVs. The retarders can be efficiently used for compensation of VA and IPS LCD modes as well as for developing custom solutions for various optical applications.

Biaxial TBF™ BA-LT-1000 retarder provides efficient LCD optical compensation. The retarder improves performance of LCD by increasing the contrast at oblique viewing angles and completely removing color inversion in VA and IPS LCD.

Positive A-plate TBF™ AP-LT-1000 retarder possesses high birefringence and can be applied as a 0.3-2 micron thick coating for efficient optical compensation of the VA LCD mode. The positive A-plate retarders can be also used as conventional quarter-wave and half-wave phase shifting plates.

Negative C-plate TBF™ CN-LT-1000 retarder being coated on birefringent polymer film (e.g., polyethylene terephthalate or polypropylene) or on LC cell glass provides efficient compensation of VA LCD mode over the entire visible spectral range.

New proprietary Crysoptix technology opens a unique opportunity to reduce material consumption and cost of LCD optical compensation films. The replacement of a set of conventional stretched polycarbonate retarders with one layer of submicron, solution-processed TBF will provide a substantial cost reduction of LCD optical components.

Crysoptix retarders are thinner, exhibit higher resistance to heat deformation (up to 250 °C) and provide improved optical compensation and enhancement of the viewing angle performance as compared to conventional retardation films. The coating material is applied directly to any substrate including glass and polymer. The high thermal stability makes Crysoptix retarder a material of choice for in-cell application.

Crysoptix coating technology enables mass production of low cost large-area retarder films.

Crysoptix KK is a leading material technology company developing, manufacturing and marketing products based on a molecular design of organic components and lyotropic liquid crystal systems. Crysoptix manufactures a set of unique liquid inks, which are used to produce optical films for LCD. Crysoptix proprietary technology is protected by an extensive patent portfolio and is currently being applied to product improvements and cost reduction opportunities in LCD industry. Responding to critical LCD industry demands, Crysoptix breakthrough technology provides control over birefringence of target optical compensation films for any LCD modes.