

Electro-Optical Polymer Materials Laboratory



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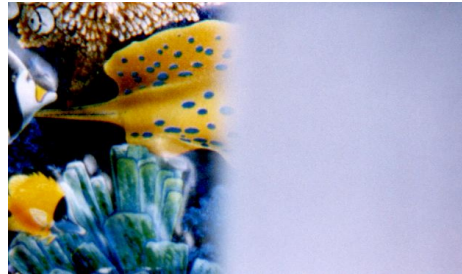
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Research Interests: →

2 Chiral compounds and liquid crystal devices

We are attempting to synthesize a series of novel chiral compounds and photoisomerizable derivatives from camphor. These compounds can be used as dopants to adjust the optical properties of liquid crystal devices. We have also been investigating the fabrication and characterization of the PSCT cells. The pictures on the right show the ON/OFF states of PSCT cells fabricated in our lab. Brightness enhancement films, polarizers, and aligning polymers are all our investigation targets.

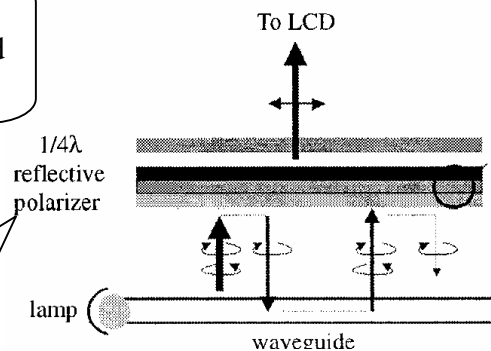


“OFF” state



Photoimageable Cholesteric liquid crystal cell

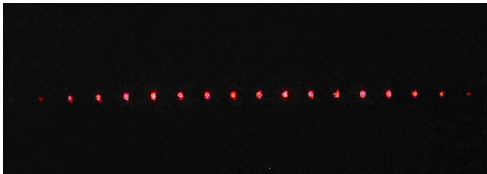
Brightness enhancement liquid crystal film





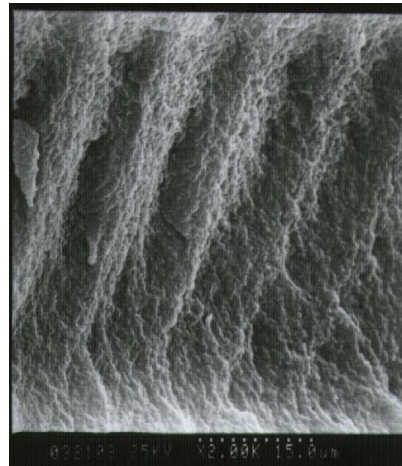
2 Photoresist

Resolution result on the left was observed through a chemical amplified photoresist synthesized in our lab. We have been investigating the effects of alicyclic structures, chirality and molecular weight on the characteristics of photoresist. Molecular functionality and structure design are the key points of our research work. Both UV light and visible light sensitive chemical amplified positive and negative tone photoresist are being studied.



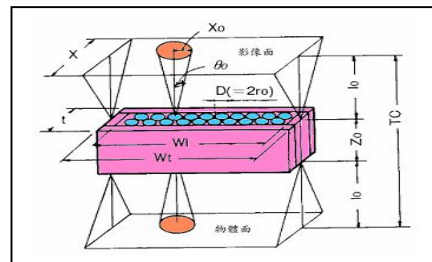
2 Holographic gratings

The picture above shows the real diffraction pattern of laser light through the grating spot recorded on the membrane with (-)-BA: DP5A= 1:1 in the presence of RB= 0.5 mol-%, NPG= 1.5 mol-%. As can be seen in the figure, a composite film can be recorded as Raman-Nath (RN) grating with small incident writing angle.



2 Photosensitive refractive index modulation film

The figure above shows the SEM micrograph of the cross section of the grating membrane fabricated in our lab.



2 Gradient refractive index (GRIN) plastic rods

GRIN optical lenses have been used widely in the field of image transmission systems and high density information transmitting systems. We have developed some novel processes for the preparation of GRIN rods. The development of novel processes, increasing of the refractive index and high numerical aperture (NA) are all our research targets. The above left picture shows the inverted image transmitted through a GRIN rod fabricated in our lab. The picture on the above right shows the application of rod array in a copy machine.