

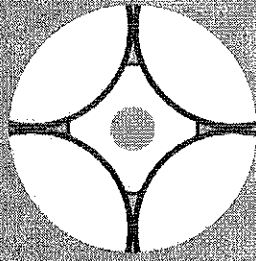
PHOTO-CONTROLLED RETARDATION FILM BASED ON A REACTIVE LIQUID CRYSTAL AND ITS USE FOR TRANSFLECTIVE DISPLAYS

J. Kim¹, D-W. Kim¹, J-H. Kim², S-D. Lee¹

¹ School of Electrical Engineering, Seoul National University, Kwanak, Korea

² Division of Electrical and Computer Engineering, Hanyang University, Korea

A patterned retardation film fabricated by the photoalignment technique and its use for transflective displays were investigated. The photopolymer used in this study is capable of controlling the molecular orientation of a liquid crystal (LC) from the homeotropic to the planar alignment depending on the intensity of the exposed ultraviolet (UV) light. Combining the intrinsic properties of the photopolymer and the UV curable LC, we obtained an optical retardation film having both the homeotropic and planar configurations of the LC layer. This approach has some advantages over the existing film processes in manufacturing of the retardation film. In contrast to conventional transflective displays that require dual cell gaps or dual LC modes involving complex manufacturing processes, a new type of a transflective display with a single LC mode and a proper retardation film can be designed. The optical retardation will appear only in the reflecting part of the transflective display through the photoaligned LC layer. A low-twisted nematic LC cell, having the twist angle less than 90°, was fabricated to determine the electro-optic characteristics of a new transflective display with only a single LC mode.



20

L
L

C

C

APPL-P031	POLARIZATION GRATING OF PHOTOALIGNED LIQUID CRYSTALS WITH OPPOSITELY TWISTED DOMAIN STRUCTURES	C-J. Yu, J. Kim, D-W. Kim, S-D. Lee
APPL-P032	DESIGN OF A POLARIZATION-INSENSITIVE DIFFRACTION GRATING DEVICE BASED ON A DYE-DOPED LIQUID CRYSTAL IN POLYMER NETWORKS	E. Jang, H-R. Kim, Y-J. Na, S-D. Lee
APPL-P033	PRECISE DETERMINATION OF THERMAL BEHAVIORS OF LIQUID CRYSTAL-BASED OPTICAL DEVICES IN THE FABRY-PEROT INTERFEROMETRY	H-R. Kim, E. Jang, Y.W. Lee, J. Im, B. Lee, S-D. Lee
APPL-P034	PHOTO-CONTROLLED RETARDATION FILM BASED ON A REACTIVE LIQUID CRYSTAL AND ITS USE FOR TRANSFLECTIVE DISPLAYS	J. Kim, D-W. Kim, J-H. Kim, S-D. Lee
APPL-P035	FABRICATION OF A POLARIZATION INDEPENDENT MICROLENS ARRAY IN THE HOMEOTROPIC LIQUID CRYSTAL CONFIGURATION	Y. Choi, Y-T. Kim, J-H. Park, J-H. Kim, S-D. Lee
APPL-P036	MOBILITY ENHANCEMENT IN AN ORGANIC THIN-FILM-TRANSISTOR OF A SOLUBLE SEMICONDUCTING POLYMER ALIGNED ON A PHOTSENSITIVE BUFFER LAYER	S-J. Kim, C-J. Yu, C-H. Kim, T-Y. Yoon, S-D. Lee
APPL-P037	OPTICAL CONTROL OF A LIQUID CRYSTAL BINARY GRATING FABRICATED ON A SURFACE-COMMAND PATTERNED LAYER	H. Baac, E. Jang, Y-T. Kim, S-D. Lee
APPL-P038	THE 00-3600 BISTABLE SWITCHING IN NLC CELLS WITHOUT INTERMEDIATE HALF-TURN TWISTED STATE	S. Palto, M. Barnik, V. Lazarev
APPL-P039	A METHOD FOR PREPARING FLEXIBLE FILMS FOR LIQUID CRYSTAL DISPLAYS	Q. Wang, S. Kumar
APPL-P040	PROPOSAL OF A PARAMETER TZ TO DEFINE BIREFRINGENCE OF BIAxIAL RETARDATION FILMS	T. Higano, T. Ishinabe, T. Uchida
APPL-P041	TRULY BISTABLE LOW VOLTAGE PHOTO-ALIGNED FERROELECTRIC LCD FOR SMART CARD APPLICATIONS	V. Chigrinov, D.D. Huang, E. Pozhidaev
APPL-P042	EFFECT OF THE SURFACE ANCHORING ENERGY ON DEFECTS IN A LIQUID CRYSTAL DIRECTOR FIELD	J.W. Lee, T.M. Kim, G. Lee, J.C. Kim, T-H. Yoon, T.W. Ko, J-H. Lee, H.C. Choi
APPL-P043	SYNTHESIS AND THERMAL PROPERTIES OF POLYIMIDES CONTAINING CHALCONE DERIVATIVE AND THEIR APPLICATION FOR ALIGNMENT FILM	N. Koide, T. Mihara, Y. Nakao
APPL-P044	OPTIMIZATION OF MEMOMI LCD PASSIVE MATRIX DRIVING	V. Chigrinov, S.A. Studentsov, V.A. Brezhnev, I.S. Bezludnaja, H.S. Kwok
APPL-P045	DEFECTS NUCLEATION AND DYNAMICAL BEHAVIOR FROM SURFACE INHOMOGENEITY	T.M. Kim, J.W. Lee, G.D. Lee, J.C. Kim, T.H. Yoon, T.W. Koh, J.H. Lee, H.C. Choi
APPL-P046	A STUDY OF THE ANTIFERROELECTRIC LIQUID CRYSTALS USING POLYAMIDES AND AC FIELD	K. Matczyszyn, N. Bennis, P. Castillo, X. Quintana, J.M. Oton
APPL-P047	EXPERIMENTAL AND NUMERICAL STUDIES ON LIQUID CRYSTAL LENS WITH SPHERICAL ELECTRODE	B. Wang, M. Ye, S. Sato
APPL-P048	NEW METHOD OF VOLTAGE APPLICATION FOR IMPROVING RESPONSE TIME OF A LIQUID CRYSTAL LENS	M. Ye, S. Sato
APPL-P049	TWO-PHOTON PUMPED LASING OF PHOTONIC LIQUID-CRYSTAL LASERS	K. Shirota, H-B. Sun, S. Kawata
APPL-P050	TIME DEPENDENCE OF SOLITON FORMATION IN PLANAR BULK NEMATIC LIQUID CRYSTAL CELLS	J. Beeckman, K. Neyts, X. Hutsebaut, C. Cambournac, M. Haelterman
APPL-P051	LEAKAGE CURRENTS IN AFLC CELLS WITH ASYMMETRIC BOUNDARIES	F. Beunis, K. Neyts, A. Adamski, J.M. Oton, X. Quintana, P.L. Castillo, N. Bennis
APPL-P052	LASER ACTION BASED ON THE ELECTRICALLY CONTROLLABLE DEFECT MODE IN ONE-DIMENSIONAL PHOTONIC CRYSTAL CONTAINING CONDUCTING POLYMER AND LIQUID CRYSTAL DEFECT LAYERS	R. Ozaki, Y. Matsuhisa, M. Ozaki, K. Yoshino
APPL-P053	THE STUDY OF PHASE TRANSITION FOR NEW BANANA-SHAPED LIQUID CRYSTALS	S.T. Shin, H. Choi, S. Kumar, Q.B. Wang, J.H. Kim, C.K. Lee
APPL-P054	EFFECT OF LAYER STRUCTURE ON RATIO OF CONCENTRATION BETWEEN POLYMER AND LIQUID CRYSTAL FOR PHASE SEPARATED COMPOSITE ORGANIC FILMS (PSCOF)	S.T. Shin, H. Choi, S. Kumar, Q.B. Wang, J.H. Kim
APPL-P055	TUNABLE DEFECT MODE IN ONE-DIMENSIONAL PHOTONIC CRYSTAL WITH LIQUID CRYSTAL DEFECT LAYER	R. Ozaki, H. Miyoshi, M. Ozaki, K. Yoshino
APPL-P056	A NOVEL METHOD TO BROADEN THE EFFECTIVE BANDWIDTH OF CHOLESTERIC LIQUID CRYSTAL POLARIZER	H-L. Kuo, P-J. Hsieh
APPL-P057	POLIPHEN - NEW TYPE OF NANOSCALE POLYMER-LC SWITCHABLE PHOTONIC DEVICES	J. Stumpe, S. Slussarenko, O. Sakhno
APPL-P058	THE ROLE OF ALIGNMENT LAYERS ON THE INDUCED RELAXATION OF PASSIVELY MULTIPLEXED ANTIFERROELECTRIC LIQUID CRYSTAL DISPLAYS	P. L. Castillo, R. Dąbrowski, P. Kula, X. Quintana, N. Bennis, J-M. Oton
APPL-P059	ELECTRO-OPTIC TELECOMMUNICATION DEVICES AT 1550NM EMPLOYING ELECTROCLINIC AND FERROELECTRIC SWITCHING OF AN ORGANOSILOXANE LIQUID CRYSTAL	O. Haderler, M. Pivnenko, M. Coles, H. Coles