P-081

PHYSICAL ORIGIN OF A BISTABLE BOUNDARY LAYER MODE OF NEMATIC LIQUID CRYSTALS, D.-H. You, S.-D. Lee (School of Electrical Engineering, Seoul National Univ., Seoul 151-742, Korea), and Y. J. Kim (Orion Electric Co., Ltd., Kumi, Kyungbuk, Korea)

The physical origin of a bistable switching in a boundary layer in a nematic liquid crystal is presented. The structural transition from symmetric horizontal to asymmetric states is attributed to the anchoring energy renormalization due to flexoelectricty. Particularly, the renormalization effect becomes profound in the weak anchoring regime. With appropriate material parameters such as the flexoelectric coefficient and the anchoring strength, numerical simulation results are in excellent agreement with the existing experimental data. The motion of an inversion wall was found to be strongly dependent on the degree of flexoelectricity.

P-082

PHOTO-ALIGNMENT OF POLY(VINYL CINNAMATE) WITH ALKYL PENDANT GROUP, **JONG-WOO LEE**, HEE-TAK KIM AND JUNG-KI PARK.

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Due to the simplicity of rubbing method, the majority of commercial liquid crystal displays use rubbed polymer alignment to achieve a pretilted planar anchoring of the nematic director at each surface. Recently non-rubbing alignment techniques, based on photo-induced anisotropy of the UV polymerizable alignment layers, have been introduced and the photo-alignment methods are considered to be a most promising candidate as a post-rubbing technique because neither excess charge nor defect is created on the substrates. However the polymers used for photo-induced liquid crystal(LC) alignment show low pretilt angle, which causes the appearance of declination at the resulting orientation domain boundaries. Since the LC alignment capability as well as the generation of pretilt angle would highly depend on the structure of the photopolymer and the interactions of photopolymer with LC, the pretilt angle generated by photo-alignment method can be enhanced by changing structure of photopolymer. In this work, we have synthesized poly(vinyl cinnamate) with alkyl pendant groups to enhance pretilt angle, and investigated the effects of the structure of photopolymer on the LC alignment and pretilt angle.

P-083

SOLID PHASE CRYSTALLIZATION OF AMORPHOUS SILICON THIN FILM BY SURFACE ACTIVATION TREATMENT, UI S. LEE, YOUNG K. KIM (Dept. of Mat. Eng, Univ of Inchon, Inchon 402-749, Korea)

We have studied the effect of the surface activation treatment on the crystallization of amorphous silicon thin films. Surface activation treatment was conducted with wet blasting of silica slurry and with laser beam exposure. After the surface activation treatment, specimen was annealed in the tube furnace for the crystallization. The degree of crystallization was analyzed with X-ray diffraction and Raman spectroscopy. The size of grain was measured with transmission electron microscopy.

Wet blasting and laser beam exposure treatment were found to enhance the crystallization of the amorphous silicon film.

P-084

CaF_2 FILMS FOR A TFT APPLICATION. **D Y. KIM**, S. W. CHOI, and J. YI (School of EEC, SKKU, Suwon, 440-746, Korea)

Fluoride film have many practical applications such as gate insulator of thin film transistor (TFT), anti -reflection coating, and optical waveguide. Most of gate oxide films of TFT like SiO_2, Ta_2O_5, Al_2O_3, and SiO_x exhibited problems on trap charge density, lattice mismatch, interface state in corporation with O-H bond created by mobile hydrogen and oxygen atom. We have investigated fluoride films as a gate insulator for TFT applications. To circumvent problems in conventional gate insulators we investigated CaF_2 which have low interface charge density and similar lattice constant to Si surface. C-V results on MIS structure of CaF_2 films show almost no mobile charges and interface state densities less than $10^{11}cm^{-2} \cdot eV^{-1}$. This low interface density is mainly contributed by the lowest mismatch in lattice constant between CaF_2 and Si. Current conduction mechanism and a new material properties of CaF_2 as a gate insulator of TFT are presented in this paper.

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