Abstract: This paper introduces the characteristics of SnO2 inorganic film deposited by radio-frequency magnetron sputtering as an alternative alignment layer for liquid crystal display (LCD) applications. The pretilt angle of the SnO2 layer was shown to be a function of the ion beam (IB) incident angle, a planar alignment of nematic liquid crystal was achieved. The about 1.8° of stable pretilt angle was achieved at the range from 1500 ~ 2500 eV of incident energy. To characterize the film shows atomic force microscopy (AFM) on the IB irradiated SnO2 surface and the X-ray photoelectron spectroscopy analysis showed that the liquid crystal (LC) alignment on the IB irradiated SnO2 surface was due to the reformation of Sn-O bonds. Also, Figure 1 shows that The alignment capability of the IB irradiated SnO2 layers is maintained until annealing temperature of 200°C. Comparable electro-optical characteristics to rubbed polyimide were also achieved.

Key Words: SnO2, pretilt angle, AFM, rubbing

Figure 1. Thermal stability photomicrographs of twisted nematic LCD cells on SnO2 surfaces irradiated with the IB energy of 1800 eV the incident angle of 45° of (a) 20°, (b) 180°, (c) 240°, (d) 250°C.

참고 문헌