

Liquid Crystal Aligning Capabilities for Nematic Liquid Crystal on the ZrO_x Thin Film Layer with E-beam Evaporation

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Abstract :In this study, liquid crystal (LC) aligning capabilities for homeotropic alignment on the ZrO_x thin film by electron beam evaporation method were investigated. Also, the control of pretilt angles and thermal stabilities of the NLC treated on ZrO_x thin film were investigated. The uniform LC alignment on the ZrO_x thin film surfaces and good thermal stabilities with electron beam evaporation can be achieved. It is considered that the LC alignment on the ZrO_x thin film by electron beam evaporation is attributed to elastic interaction between LC molecules and micro-grooves at the ZrO_x thin film surface created by evaporation. In addition, it can be achieved the good electro-optical (EO) properties of the VA-LCD on ZrO_x thin film layer with oblique electron beam evaporation.

Key Words : ZrO_x thin film, LC alignment, pretilt angle, annealing, thermal stability, response time, voltage-transmittance