

이온빔 배향에 의한 수직 배향막의 액정 배향

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Vertical Alignment of Liquid Crystal by Ion Beam Irradiation

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Abstract : In this study, Liquid Crystal (LC) alignment and tilt angle generation in Nematic Liquid Crystal (NLC) with negative dielectric anisotropy on the homeotropic PI surface with new ion beam exposure are reported. Also, high density of ion beam energy (DuoPIGatron type Ar ion gun) is used in this study. The tilt angle of NLC on the homeotropic Polyimide (PI) surface for all incident angles is measured about 38 degree and this has a stabilization trend. And the good LC alignment of NLC on the PI surface with ion beam exposure of 45° incident angle was observed. Also the tilt angle of NLC on the homeotropic PI surface with ion beam exposure of 45° had a tendency to decrease as ion beam energy density increase. The tilt angle could be controlled from verticality to horizontality. Also, the LC aligning capabilities of NLC on the homeotropic PI surface according to ion beam energy has the goodness in case of more than 1500 eV. Finally, the superior LC alignment thermal stability on the homeotropic PI surface with ion beam exposure can be achieved. For OCB(Optically Compensated Bend) mode driving, we can need pretilt angles control for fast response time. In this study, We success pretilt angles control. Consequently, this result can be applied for OCB mode.

Key Words : LC Alignment, Ion-beam, Homeotropic alignment, polyimide, Tilt angle, Incident angle