

이온빔 조사를 사용한 탄탈륨 산화막에서의 액정 배향에 대한 조사

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Research of Liquid Crystal Alignment on Tantalum Oxide by Using Ion Beam Irradiation

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Abstract : In this study, the advanced DuoPIGatron-type ion beam (IB) system was applied to inorganic thin film for aligning liquid crystal (LC). LC alignment on Ta₂O₅ via IB irradiation was embodied. As a result of IB irradiation, the homogeneously aligned liquid crystal display (LCD) on Ta₂O₅ was observed with low pretilt angles. The Ta₂O₅ were deposited on indium-tin-oxide coated Corning 1737 glass substrates by rf magnetron sputtering at 200°C. The deposition process resulted in forming very uniform thin film on glass substrates without any defects. To confirm the application of the inorganic alignment on modern display optical devices, we fabricated twisted nematic LCD and measured optical property and response time. As a result of the experiment, the electro optical characteristics of the LCD fabricated by using IB irradiation on Ta₂O₅ alignment layer were similar with the other LCD fabricated by using rubbing process.

Key Words : Liquid crystal alignment, Ta₂O₅, ion beam irradiation

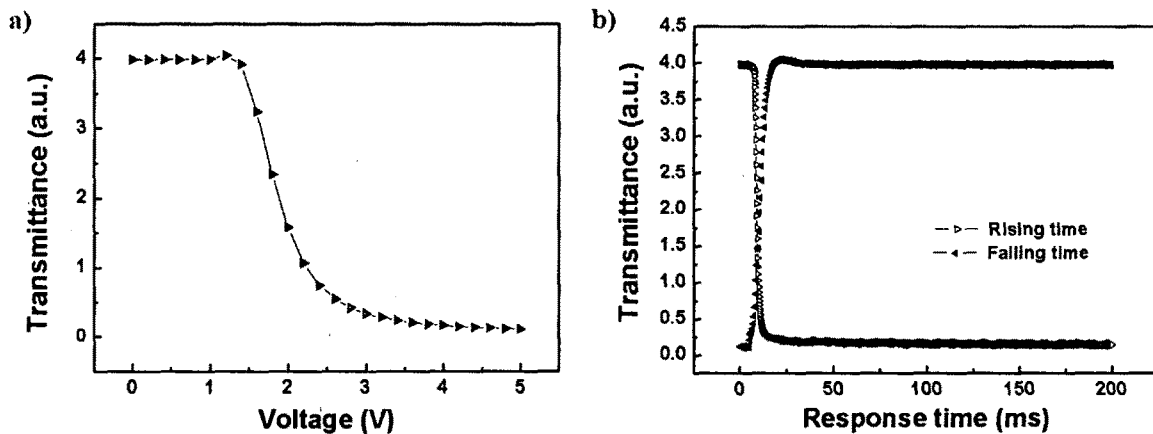


FIG. 1. (a) The transmittance curve and (b) the response time as a function of applied voltage of LCD with IB irradiated Ta₂O₅ alignment layer.

참고 문헌

- [1] J. Y. Hwang, S. H. Choi, S. H. Kim, J. Jang, and D. S. Seo, Mol. Cryst. Liq. Cryst. Vol. 480, p. 10, 2008.
- [2] D. S. Seo, S. Kobayashi, and M. Nishikawa, Appl. Phys. Lett. Vol. 61, p. 2392, 1992.