

이온 빔 조사된 SiNx 박막의 액정 배향 효과에 관한 연구

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Investigation on Liquid Crystal Alignment Effects of SiNx Thin Film Irradiated by Ion Beam

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Abstract : Most recently, the Liquid Crystal (LC) aligning capabilities achieved by ion beam exposure on the diamond-like carbon (DLC) thin film layer have been successfully studied. The DLC thin films have a high mechanical hardness, a high electrical resistance, optical transparency and chemical inertness. Nitrogen doped Diamond Like Carbon (NDLC) thin films exhibit properties similar to those of the DLC films and better thermal stability than the DLC films because C:N bonding in the NDLC film is stronger against thermal stress than C:H bonding in the DLC thin films. Moreover, our research group has already studied ion beam alignment method using the NDLC thin films. The nematic liquid crystal (NLC) alignment effects treated on the SiNx thin film layers using ion beam irradiation for three kinds of N rations was successfully studied for the first time. The SiNx thin film was deposited by plasma-enhanced chemical vapor deposition (PECVD) and used three kinds of N rations. In order to characterize the films, the atomic force microscopy (AFM) image was observed. The good LC aligning capabilities treated on the SiNx thin film with ion beam exposure for all N rations can be achieved. The low pretilt angles for a NLC treated on the SiNx thin film with ion beam irradiation were measure.

Key Words : SiNx, ion beam, LC alignment, pretilt angle, AFM