PDP의 격벽 형성 공정인 감광성 공법에서 B_2O_3-Al_2O_3-SiO_2계 유리 조성의 열적 특성과 굴절률 변화

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Thermal Properties and Refractive Index of B_2O_3-Al_2O_3-SiO_2 Glasses for Photolithographic Process of Barrier Ribs in PDP

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Abstract : To obtaingood resolution in PDP, one of the important factors is to achieve the accuracy of barrier ribs. The photolithographic process can be used to form patterns of barrier rib with high accuracy and a high aspect ratio. The composition for photolithography is based on the B_2O_3-SiO_2-Al_2O_3 glass system including additives such as alkali oxides and alkali earth oxides. The refractive index and thermal properties in glass system are changed by amount of alkali oxides and alkali earth oxides. Therefore, it is important that additives are controlled to have proper refractive index and thermal properties. The additives are contributed to non-bridging oxygen within the glass network, causing a change of density. In addition to a change of the structural cross-link density, the refractive index, dielectric and thermal properties glass are correlated with ionic radius and polarizability of cations. In this study, we investigated the refractive index and the thermal properties such as glass transition temperature, glass softening temperature and coefficient of thermal expansion by changing composition in the B_2O_3-SiO_2-Al_2O_3 glass system.

Key Words : Photolithographic process, Refractive index, B_2O_3-SiO_2-Al_2O_3 glass system