Abstract Submitted
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Characterization of surface and pore morphologies on nanoporous organosilicate films[1] JEEUN KIM, HEEJU LEE, SANGHOON SONG, WON-SUK CHA, HYUNJUNG KIM, GUNWOO PARK, SUNGKYU MIN, TAEHOON LEE, HEEWOO RHEE, Sogang University, Korea, GWANGWOO KIM, Pohang Light Source Pohang, Korea — We have fabricated nanoporous organosilicate films with reactive porogen trimethoxysilyl - propyl - cyclodextrin(TMSCD). With same amount of porogen loading, the films with reactive porogen. TMSCD have shown higher mechanical strength than those with other non-reactive porogen. We have measured the pore morphologies depending on the types of porogens and loading densities along the pore generation processes by the grazing incidence small angle x-ray scattering, x-ray reflectivity, and ellipsometry. We measured the porosity of the film as a function of time and the annealing condition. We determined the actual porosity by measuring electron density of the films. In low loading density (10%∼40%) pore size is very small and pore distribution is uniform. In high loading density (>50%) the pores start to aggregate. We found that the porosity of the films can be affected easily by moisture. The results will be discussed with the mechanical properties along the optimized conditions for the films with ultra low dielectric constant.

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