Effect of UV Precure on the Organosilicate Thin Films Containing UV Responsive Pendent Group

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Nanoporous organosilicate thin films are one of the most promising candidate material for low-k dielectric material and PMSQ(poly-methylsilsesquioxane) is genrally used as matrix of it. Since the secondary condensation of PMSQ occurs to 300℃, the pore generating materials(porogen) should be decomposed above that. This is one of key factor to select a porogen. In this study, we synthesize a new MSSQ precursor containing UV responsive pendent group and proposed an UV curing technique at room temperature using UV responsive MSSQ. This matrix can make not only various materials decomposed before 300℃ available as porogen, but also the process temperature to 400℃. Chemical structure of low dielectric films are characterized using FT-IR spectroscopy. Porosities of nanoporous films are calculated from refractive indices. Mechanical properties are measured using a nanoindenter.