

Electronic Supplementary Information

Photo-induced sol-gel synthesis of polymer-supported silsesquioxane membranes

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ESI-1

Figure S1 shows the FTIR spectra of BTESE-derived films prepared with different UV irradiation time. The absorption peak at 2980 cm^{-1} , which can be ascribed to the vibration of CH_3 in the ethoxy groups, was clearly observed for the spectrum for the film before the UV irradiation. As can be seen in the spectra for the film after 15 s of UV irradiation, the peak of ethoxy groups was still significant. While, for the films after 30 and 120 s of UV irradiation, the peak at 2980 cm^{-1} decreased and the peak at 900 cm^{-1} , which is ascribed to the silanol groups, increased. This indicates that the photo-induced hydrolysis of ethoxy groups in BTESE-derived sols took 30 s to complete the reaction. The required UV irradiation time was longer than that for BTMSE-derived films probably due to the lower reactivity of ethoxy groups compared with methoxy groups.

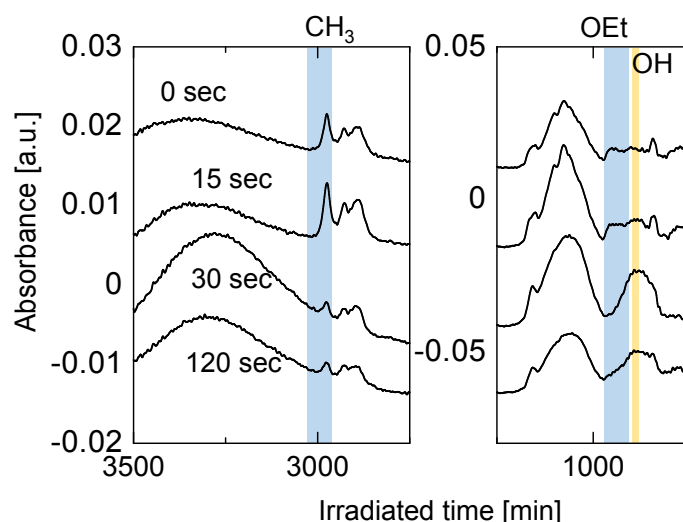


Figure S-1. FTIR spectra of BTESE-derived films with PAG before and after UV-irradiation for 15, 30, and 120 s. The light-to-sample distance was 200 mm.