

Modification of photosensitive Polyvinylsilazane for patterning by photolithography

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A highly photosensitive isocyanatodiacrylate, a precursor for ceramic was synthesized by the reaction of polyvinylsilazane with 1,1-bis(acryloxyethyl)ethyl isocyanate and the chemical changes in this reaction were investigated by ¹H-NMR and FT-IR Spectroscopy for the identification of the precursor.

The functionalization of polyvinylsilazane with isocyanatodiacrylate gave a high sensitivity against to UV ray so that the technique of ultraviolet nanoimprint lithography was readily available for the one-step fabrication of 3D or multilevel nano/microstructures with this precursor.

The isocyanatodiacrylate moiety increased the sensitivity in UV-NIL which imprinted the fine structures through single-step multilayered stamping onto a UV-curable resist coated on a substrate with no identifiable damage.