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Fluorinated materials for UV nanoimprint lithography

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Abstract

The "demolding" is the important key for UV nanoimprint lithography (UV-NIL) which attracts a lot of attention recently as microfabrication technique. Then, we present in this paper, new fluorinated mold material and new fluorinated photosensitive polymer which are suitable for the UV-NIL because of their high transparency and excellent mold-release characteristics. By using our mold material "F-template", the process cost can be drastically reduced because it can be used as replicated mold instead of using expensive quartz master mold. F-template requires no releasing agent is another advantage. We also developed photosensitive polymer "NIF-A-1" which has high transparency, good mold-releasing ability and good dry etching resistance. Unlike the common photosensitive polymer, NIF-A-1 did not need a releasing agent on the mold.

Keywords: Nanoimprint; UV; Fluorinated material; Mold; Photosensitive polymer