Nanopatterning using fluoropolymer as mold material by UV-NIL process

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Nano imprint lithography (NIL) has gained lot of attention amongst all the lithographic techniques in the field of nanofabrication. However there are many limitations associated with this, UV-NIL process in particular. In UV-NIL process the mold material must have low surface energy, sufficient modulus,transparent to UV exposure and low viscosity. For fabricating smaller sub-nm features there is an increasing need for new mold materials. polydimethylsiloxane (PDMS) has been the material of choice for most soft lithographic applications. But, many limitations associated in using PDMS in UV-NIL process low modulus, and swelling effect in most organic solvents. Fluoropolymer possess attributes of both elastomers and rigid materials, better mold release property, exhibits a remarkable low surface energy, molds sub-nm features with high fidelity and minimal shrinkage, resist swelling by most organic solvents, endure repetitive molding procedures, and out-perform routinely used polydimethylsiloxane. It has a wide range of applications in. micro fluidics device fabrication for rapid separations, sensors, nano scale reactions, ink-jet printing and so on.