

Synthesis of UV-curable, solvent resistant fluoropolymers as mold material in softlithographic patterning

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Amongst all the soft lithographic techniques, Imprint lithography (IL) has gained lot of attention. However to overcome the limitations of IL in fabricating smaller sub-100nm features there is an increasing need of new mold materials. In our present work the use of photocurable perfluoropolyethers (PFPE's) which is less viscous and can be cured into tough, highly durable elastomer's that exhibit remarkable chemical resistance and low surface energy. PFPE's out perform PDMS in replicating sub-micron sized features. Use of composite mold with PFPE and PDMS was explored to derive the noble characteristics of both i.e to rope solvent resistivity, durability, low surface energy of PFPE's with flexibility and elastomeric property of PDMS. Thin layer of PFPE is used to obtain the features above which PDMS was poured to get the desired support. this composite mold is used in IL to obtain sub-nm features on inorganic preceramic polymers.