

SiCN Ceramic Patterns Fabricated by Soft Lithography Techniques

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Highly stable SiCN ceramic patterns on Si substrates with dimensions on the sub-micron scale were fabricated with a liquid ceramic precursor and economic nanoscale CD and DVD masters using two soft lithography techniques, modified imprint lithography and micromolding in capillaries (MIMIC). The soft or hard PDMS mold transferred from the masters was used to fabricate the cured polymer patterns at 70~90°C. The patterns were then converted to a ceramic phase by pyrolysis at 800°C in a nitrogen atmosphere. The patterning capability of the two lithographic techniques was compared using atomic force microscopy and scanning electron microscopy observations of the masters, molds, preceramic polymer and ceramic patterns. The relative merits of the two lithographic techniques for ceramic patterning are reported.