

## Fabrication of SiC ceramic nano patterns with near-zero shrinkage by imprinting lithography

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In this study, we report the fabrication of SiC ceramic nano patterns with near-zero shrinkage by imprinting lithography technique. SiC nano patterns on Si substrates were fabricated by using a viscous allylhydro polycarbosilane as a ceramic precursor and commercially available CD was used as available economic nano-scale master. The resulting nano patterned preceramic polymer were pyrolysed at 600°C under nitrogen atmosphere. In this experiment, two materials such as allylhydro polycarbosilane(AHPCS, SMP-10) as inorganic polymer precursor and  $\eta^5$ -Cyclopentadienyl trialkylplatinum as the crosslinking agent. SiC ceramic materials possess unique physical and chemical properties such as excellent thermal stability, high mechanical strength and chemical inertness even under harsh condition. But in general, SiC ceramic materials undergo high shrinkage during pyrolysis step, because it has functional carbonyl groups. To overcome this problem, 1% of  $\eta^5$ -Cyclopentadienyl trialkylplatinum was loaded onto the uncured AHPCS liquid. The resultant nano patterns obtained from the above materials show high ceramic yield and near-zero shrinkage after pyrolysis.