

Synthesize Photocurable Polycarbosilane as a Photoresist for Direct SiC Ceramic Patterning

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Polycarbosilane (PCS) is a well known preceramic polymer as a SiC precursor, which has been used for high temperature structural materials. Because of its excellent resistance to corrosion and thermal shock, PCS finds widespread applications such as aerospace, weapon systems electronic and photo electronic device. Photocurable PCS, which including no-oxidative curing step for high temperature stable SiC are being used as a thin photoresist for ceramic patterning in a wide range of application such as semiconductor processing, optical circuits, microfluidic devices and microelectromechanical systems (MEMS). At this work, a newly photocurable PCS as a SiC precursor was synthesized by functionalization PCS with various kinds of photocurable precursors via hydrosilylation reaction routes. In addition, another kind of photocurable PCS was also synthesized by mixing with the unsaturated curable compound. The photoactivity behaviors of PCS were investigated and the obtained PCS could be cured by UV irradiation in the presence of photoinitiator.