

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Photo-active Silicon Containing Polymer Films; An Approach Towards All-Solution Processable Devices¹ SCOTT LEFEVRE, XINXING LIU, LEONARD INTERRANTE, CHANG RYU, Rensselaer Polytechnic Institute — The continuous drive for smaller, cheaper electronic devices elucidates the necessity for the design and incorporation of materials with improved properties along with a greater ease of processability. Polycarbosilanes (PCSs) are a class of organic-inorganic hybrid materials which exhibit increased chemical and thermal stability, appreciable hydrophobicity, and significant mechanical robustness. Recently, we have developed UV-crosslinkable cycloliner PCSs by the incorporation of aryl substituted disilacyclobutane (DSCB) rings into the backbone. This novel material exhibits a low dielectric constant (k), making it an attractive new material in the development of interlayer dielectrics. Preliminary data shows that there is a maximum UV-crosslinking depth of approximately 30 microns. Additionally we have successfully demonstrated the resist capabilities of this material by patterning micro-scale (about 10 microns) features with a surface roughness variation of approx. 1 percent. Finally, new approaches towards taking advantage of the reactivity of polysilanes and the effect of molecular weight and polydispersity will be discussed.

¹NSF - CHE 0412198, DMR 0722563, MRI 0722563

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Date submitted: 22 Dec 2010

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