

Abstract Submitted  
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**Passivation Layer by SiC Thin Film Deposition for High Efficiency Solar Cells** MAHDI HAGHZEDEH, ECE U. Mass Lowell, DANIEL SCHMIDT, Plastics Eng U. Mass Lowell, JOEL THERRIEN, ECE U. Mass Lowell — Deposition of a polymer derived SiC thin film as a novel, chemically and physically stable passivation layer to enhance the efficiency of solar cells by way of reducing surface recombination was studied. Starfire Matrix Polymer number 10 (SMP-10) is used to produce thin films of SiC on ion implanted silicon wafers. To ascertain the best method to deposit, three methods were tested: spin coating, spray coating, and dip coating are used. Various concentrations of SMP-10 diluted in xylene as an appropriate solvent are examined. To test the films, a contactless inductive coupling method is used. The thinner layers of SiC are grown by a lower percentage of SMP-10 (5%), higher spin speed in spin coating (3000 RPM), and lower pulling out speed in dip coating (50 mm/minute). All of the methods yield controllable, repeatable, and uniform thin films. Although eliminating oxygen as an impurity in the passivation layer remains a challenge, the described approach has promise as a simple, low-cost passivation layers for higher efficiency solar cells.

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