



Contribution ID: 407

Type: **Poster Presentation**

## Deposition, Optical and Electrical Characterization of Silicon Carbide Thin Films for Solar Cell Applications

*Wednesday, 13 July 2011 17:00 (2 hours)*

Silicon carbide (SiC) materials have attracted a lot of attention because of their good optical and electrical properties. In recent years there has been an intense focus in research on controlling the optical and electrical properties of amorphous SiC thin films deposited at low temperature of the substrate. SiC has a wide bandgap which can be tuned by varying the carbon content in the thin film. The SiC thin films also have a high electron mobility, high electron saturation velocity, optical transparency which make them candidates for use as window layer in solar cells. The low deposition rate issue in SiC thin films processing has not yet been resolved. This contribution will focus on optimizing the deposition rate by studying the influence of the deposition parameters on the deposition rate. The thin films ranging from amorphous to microcrystalline SiC has been deposited by magnetron sputtering and hot wire chemical vapour deposition at low substrate temperature of the substrate below 300 oC. The optical properties of the films have been investigated transmission/reflectance spectrum using the OJL model in SCOUT and by computation using the iterative method of Swanepoel. The electrical properties such as conductivity, bulk concentration and mobility will be investigated by Hall Effect measurements.

**Level (Hons, MSc, <br> &nbsp; PhD, other)?**

MSc

**Consider for a student <br> &nbsp; award (Yes / No)?**

No

**Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?**

No

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