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

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Abstract content
   (Max 300 words)

Amorphous and nanocrystalline silicon carbide thin films were studied by investigating the relationship between its structural and optical properties. The samples were deposited on corning glass 7059 (for optical properties) and c-Si (100) (for structural and electrical properties) substrates using the Hot Wire Chemical Vapor Deposition (HWCVD) technique. Samples were prepared at low substrate temperatures below 300 degrees Celsius and a gas mixture of SiH4/CH4/H2 was used. The structural properties such as the phase changes and crystallinity in the films were studied by X-ray diffraction (XRD), Raman spectroscopy and transmission electron microscopy (TEM) and Fourier Transform Infrared Spectroscopy (FTIR) was used to investigate the hydrogen content and the SiC vibrational bonds in the samples. Plane view and cross section specimen were prepared by the TRIPOD polishing technique for the TEM structural investigation. The optical properties of the films have been investigated by transmission/reflectance spectrum using the OJL model in SCOUT [1] and by computation using the iterative method of Swanepoel. The results obtained from the resistivity measurements on the samples will be presented.

Apply to be
 consider for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD)?

MSc

Main supervisor (name and email)
and his / her institution

Dr. Sylvain Halindintwali

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

No

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