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## Microstructure evolution of ruthenium with 6H-SiC interface under vacuum annealing and the implications for the performance of its Schottky contact for high temperature operating diodes.

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**Abstract content**   
 (Max 300 words)   
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Thin films and Schottky diodes of ruthenium (Ru) on bulk-grown n-type-6-hexagonal-silicon carbide (6H-SiC) were annealed isochronally in a vacuum furnace at temperatures ranging from 500 -1000C. Rutherford backscattering spectroscopy analysis of the thin films showed formation of ruthenium silicide ( $\text{Ru}_2\text{Si}_3$ ) at 800C, while diffusion of Ru into 6H-SiC commenced at 800C. Raman analysis of the thin films annealed at 1000C showed clear D and G carbon peaks which was evidence of formation of graphite. At this annealing temperature the Schottky contact was observed to convert to an ohmic contact, as evidenced by the linearity of current-voltage characteristic, thereby rendering the diode unusable. The transformation from Schottky contact to ohmic contact is attributed to graphite formation at the interface.

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

Yes

**Level for award (Hons, MSc, PhD)?**

PhD

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

Prof. Chris Theron, Department of Physics, University of Pretoria, Email: [chris.theron@up.ac.za](mailto:chris.theron@up.ac.za)

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

Yes

**Primary author:** Mr MUNTHALI, Kinnock Vundawaka (University of Namibia)

**Co-authors:** Prof. THERON, Chris (University of Pretoria); Mr NJOROGÉ, Eric (University of Pretoria); Prof. AURET, F. Danie (University of Pretoria); Dr PRINSLOO, Linda (University of Pretoria); Mr COELLHO, Sergio (University of Pretoria)

**Presenter:** Mr MUNTHALI, Kinnock Vundawaka (University of Namibia)

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