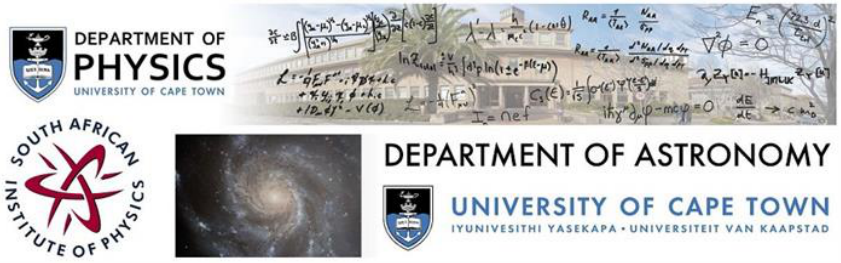

Contribution ID: **235** Type: **Oral Presentation**

Effect of thermal annealing on the electrical characteristics of Au/Ni Schottky contacts on high doped n-type 4H-SiC

Friday, 8 July 2016 11:50 (20 minutes)

Abstract content
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Au/Ni contacts have been resistively fabricated on highly doped n-type 4H-SiC. The effect of annealing temperature on the electrical characteristics of the Schottky barrier diodes (SBDs) has been successfully investigated using current-voltage (I-V) and capacitance-voltage (C-V) techniques measured at room temperature (˜300 K). Prior to the annealing of the contacts, the I-V measurements results confirmed the good rectification of the SBDs with ideality factor, Schottky barrier height and series resistance of 1.06, 1.33 eV and 7 Ω, respectively. From the I-V and C-V measurements, a decrease in the quality of the contacts with increasing annealing temperature was observed from the values of electronic parameters such as Schottky barrier height, ideality factor, series resistance and saturation current and net donor concentration obtained. The SBDs maintained their rectification quality up to the annealing temperature of 500 ℃ before the contacts start deteriorate with increase in annealing temperature.

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Prof. W. E. Meyer (wmeyer@up.ac.za
University of Pretoria

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Primary author: Dr OMOTOSO, Ezekiel (University of Pretoria)

Co-authors: Prof. AURET, Danie (University of Pretoria); Dr DIALE, Mmantsae (University of Pretoria); Dr MEYER, Walter (University of Pretoria)

Presenter: Dr OMOTOSO, Ezekiel (University of Pretoria)

Session Classification: Division for Physics of Condensed Matter and Materials (2)

Track Classification: Track A - Division for Physics of Condensed Matter and Materials