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Thermal stability studies on Palladium Schottky contacts on n- Si (111) and the defects introduced during fabrication and annealing processes.

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Abstract content
 (Max 300 words)

Palladium (Pd) Schottky contacts were fabricated on epitaxially grown n-type Silicon (111) by electron beam deposition. Current-voltage (I-V), capacitance- voltage (C-V) and deep level transient spectroscopy (DLTS) measurement techniques were used to characterise the as deposited and annealed and Pd/n-Si Schottky contacts. These contacts were annealed at temperatures ranging from 100°C to 400°C, in steps of 25°C for twenty minutes at each temperature. The ideality factor increased from 1.02 for as deposited to 2.61 after annealing at 400°C while the Schottky barrier height (SBH) decreased from 0.80 to 0.70 eV for the as deposited and annealed at 400°C contacts. DLTS revealed that electron beam deposition introduced defects which were identified as the E-centre (VP centre), the A-centre (VO centre), the interstitial carbon (Ci) and the interstitial carbon-substitutional carbon (CiCs) pair. Isochronal annealing at twenty minute intervals revealed that the E-centre vanishes between 125 and 175°C annealing while the concentration of the A-centre increased in this range. The A-centre annealed out above 350°C and after 400°C.

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Dr Mmanstae Diale molemi@up.ac.za

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Primary author: Ms DANGA, Helga (University of Pretoria)

Co-author: Dr DIALE, Mmanstae (University of Pretoria)

Presenter: Ms DANGA, Helga (University of Pretoria)

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