

Effect of thermal treatment on the characteristics of iridium Schottky barrier diodes on n-Ge (1 0 0)

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Abstract

Iridium (Ir) Schottky barrier diodes were deposited on bulk grown (1 0 0) Sb-doped *n*-type germanium by using the electron beam deposition system. Electrical characterization of these contacts using current–voltage (*I*–*V*) and capacitance–voltage (*C*–*V*) measurements was performed under various annealing conditions. The variation of the electrical properties of these Schottky diodes can be attributed to combined effects of interfacial reaction and phase transformation during the annealing process. Thermal stability of the Ir/*n*-Ge (1 0 0) was observed up to annealing temperature of 500 °C. Furthermore, structural characterization of these samples was performed by using a scanning electron microscopy (SEM) at different annealing temperatures. Results have also revealed that the onset temperature for agglomeration in a 20 nm Ir/*n*-Ge (1 0 0) system occurs between 600 and 700 °C.