Study of the Pulse Height Defect of 4H-SiC Schottky Barrier Detectors in Heavy Ion Detection

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Abstract. We fabricated and studied 4H-SiC Schottky diodes based on high quality epitaxial layer. We used two different thicknesses of the epitaxial layer, 25 μm and 50 μm. Detectors have Ni Schottky contacts with 3 mm of diameter. The current voltage characteristics in forward and reverse direction were measured at room temperature and detectors show current density about 10^{-10} A/cm^{-2}. Both detectors were connected to the spectrometric chain and the energy calibration was realized utilizing ^{226}Ra α-particle radioisotope source. Following, detectors were used for detection of Xe ions with energy from 30 MeV up to 165 MeV. The pulse height defect in detectors was observed up to 40% at maximum ion energy.