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High k oxides on Germanium: High energy x-ray detector
R&D ABDUL RUMAIZ, GABRIELLA CARINI, PETER SIDDONS, National Synchrotron Light Source, Brookhaven National Laboratory, PAVEL REHAK, Brookhaven National Laboratory — The higher density of Germanium (Ge) makes it an ideal candidate for high energy x-ray detectors. The higher mobility of carriers combined with a low effective mass in Ge as compared to Silicon has generated a lot of interest in Ge based devices for high speed devices. However the challenge associated with native oxide makes pixel isolation in a diode array very challenging. Furthermore suitable implants and activation of the implants with temperature constrain is also an issue. We have made a simple Ge diode with Boron and Phosphor as p and n implant. Low temperature grown high k oxide by direct metal sputtering and atomic layer deposition was used. Details of the Ge wafer processing and the effect of different interface layer on the capacitance-voltage characteristics will be discussed.

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