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Effect of hydrogen in the migration of Sr implanted into SiC

Effect of hydrogen in the migration behavior of strontium implanted into SiC was investigated. Polycrystalline SiC samples were first implanted with 300 keV Sr ions to a fluence of 2×10^{16} ions/cm² at room and 350 oC. Some of the implanted samples were then co-implanted with hydrogen ions of 15 keV at RT and 350 oC, to the fluence of 1×10^{17}

ions/cm². The samples were then annealed at 1000 oC for 5 hours. Both the as-implanted and annealed samples were characterized by Raman spectroscopy and Rutherford backscattering spectroscopy (RBS). SRIM simulation indicated that Sr and H have approximately the same projected range. Co-implantation at RT amorphized SiC while co-implantation at 350 oC retained crystallinity with defects. Annealing caused some recrystallization in both samples which were accompanied by migration of Sr in RT co-implanted SiC and no migration in the 350 oC co-implanted SiC.

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