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Migration behavior of selenium implanted into polycrystalline SiC

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Migration behavior of selenium (Se) in polycrystalline SiC was investigated using Rutherford backscattering spectrometry (RBS), scanning electron microscopy (SEM) and Raman spectroscopy. Se ions of 200 keV were implanted into polycrystalline SiC samples to a fluence of $1 \times 10^{16} \text{ cm}^{-2}$ at room temperature. Some of the implanted samples were annealed in temperature ranging from 1000 to 1500 oC in steps of 100 oC for 10 hours. Implantation of Se amorphized SiC. Annealing at 1000 oC already resulted in the recrystallization of amorphous SiC. Diffusion of Se began after annealing at 1100 oC and become more pronounced with increasing temperature. At 1300 oC it was accompanied by 10% loss of Se while at above 1300 oC it was accompanied by loss and peak shift towards the surface. From the peaks broadening the diffusion were estimated in the temperature range from 1300 to 1500 oC.

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