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Application of positrons to surface defects on 6H-SiC

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The positron work function of 6H-SiC was determined to be $-2.1(0.1)$ eV from an analysis of the energy spectrum of positrons reemitted from the surface. The positron reemission yield was significantly reduced after Ne ion sputtering, which generates defects on surface. After annealing at 900 C, the yield was recovered. Analysis using electron induced Auger electron spectroscopy and positron-annihilation-induced Auger electron spectroscopy indicated that the surface was Si enriched after sputtering and C enriched after subsequent annealing. These results provide the information regarding near surface defects and changes in the surface chemical composition of SiC resulting ion bombardment and annealing.