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Temperature Dependence of the Ion Beam Induced Recrystallization of SiC

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SiC is a promising semiconductor material for high temperature, high power and high speed electronic applications.

However, a basic problem of this material is the annealing of radiation damage formed during ion implantation. In particular, ion beam amorphized SiC is known to be very stable against thermal annealing. One method to overcome this problem seems to be the ion beam induced epitaxial crystallization (IBIEC). Recently, first results have been published concerning IBIEC of SiC [1]. The results show a recrystallization effect already at 480 °C with a rate of 1.5 nm/10^{16} cm^{-2}. This has to be compared with a temperature of 1500 °C necessary for the thermal recrystallization of SiC.

The present paper reports results on the temperature dependency of IBIEC and compares the influence of different implants in SiC on the crystallization rate and the crystallization range.

[1] V. Heera, R. Kögler, W. Skorupa and E. Glaser, Mat. Res. Soc. Symp. Proc., Vol 316 (1994) 229