

## THE INFLUENCE OF ION IRRADIATION ON THE PROPERTIES OF CERAMIC SILICON CARBIDE

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Silicon carbide SiC is a wide-band semiconductor material promising for high-power, high-temperature and radiation-resistant electronic devices. That stimulates study of the influence of the various kinds of radiation on the characteristics of SiC and of devices based on it. In this paper the structural, electrical and optical characteristics of the ceramic silicon carbide before and after irradiation by carbon and hydrogen ions in regimes of high-power ion beams and high-intensity short-pulse implantation were studied. Electrical and optical characteristics of ceramics before and after irradiation are determined by the influence of biographical and radiation defects whose energy levels localized in band gap and distributed continuously. A predominant activation component of conduction of p-type with participation of shallow acceptor levels is complemented by hopping mechanism of conduction. The influence of radiation defects having deep levels in the band gap on properties dominates after short-pulse implantation of ions. A new material with higher content of Si and changed electronic structure and properties is formed in surface layer of ceramics after the impact of the high-power ion beams.

**Keywords:** *silicon carbide, conduction, optical absorbtion, localized states, high-intense pulsed ion beams, ion implantation.*