

ELECTROPHYSICAL
PROPERTIES OF THE CRYSTALS
 $\text{Bi}_{12}\text{SiO}_{20}$ IN THE ELECTRET STATE
UNDOPED AND DOPED BY Al AND Ga IONS

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S u m m a r y

Relationships between the nonlinearity of current-voltage (I-V) and capacitance-voltage (C-V) characteristics of $\text{Bi}_{12}\text{SiO}_{20}$ crystals, on the one hand, and their doping with Al and Ga ions, as well as their transition into the thermo- or photoelectret state, on the other hand, have been studied. The dependences of the non-linearity index and the characteristics of the I-V and C-V hysteresis loops on the polarization temperature and the energy of quanta of photoactivating illumination have been obtained. The evolution of hysteresis loops has been examined. The results obtained have been explained by involving such factors as the formation of Schottky barriers, confined electron injection from electrodes, and the mechanisms of bulk and quasidipole polarization which are responsible for the formation of thermo- and photoelectret states.