

MOBILITY OF CURRENT
CARRIERS IN SEMICONDUCTORS
WITH LARGE-SCALE STRUCTURAL DEFECTS

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S u m m a r y

In the diffusive approximation, the effect of the crystal structure imperfections, for which the characteristic space dimensions exceed the free length of current carriers, on a current carrier mobility is studied. Within the approximation considered, a change in the relative mobility $\Delta\mu$ is expressed through the root-mean-square (rms) fluctuation of the current carrier concentration ε_2 which is determined by the nature of inhomogeneities. It is shown that the Ohmic and Hall mobilities in the semiconductors with statistical inhomogeneities are different functions of ε_2 . For the samples which are homogeneous on the average, with the use of specific models for inhomogeneities of different origins, the temperature dependences of $\Delta\mu$ are explained and the parameters of the regions with imperfections are estimated. A model describing the interaction of point defects with gadolinium clusters in *p*-Si is built.