

THE INTERACTION BETWEEN IMPURITY
ATOMS AND DISLOCATIONS IN NaCl
CRYSTALS

G. V. Vesna, N. N. Novikov, O. O. Smikhnov

Taras Shevchenko Kyiv University, Faculty of Physics
(6, Academician Glushkov Prosp., Kyiv 03127, Ukraine)

S u m m a r y

The method of secondary ion mass-spectrometry (SIMS) is used to investigate the influence of the ageing process on the impurity structure of NaCl single crystals. It is found that the concentration of positive impurity ions (as compared to the negative ones) on the surface of a fresh split is much lower than that on the one discovered on the same surface after ageing. With increasing the ageing period, the number of positive impurities is growing at first and then begins to decrease until it reaches some value which is, as a rule, greater than that on the surface of a fresh split. In crystals with greater dislocation densities the process of positive ion exit to the surface occurs more intensively. It has been shown that the deformation ageing processes of newly introduced dislocations are undoubtedly connected with their becoming overgrown with positive impurities. In the ageing processes, the most active are the atoms of indium, iron, chrome, and potassium. The negative ions, as can be seen, do not participate in the ageing of dislocations. However, the presence of oxygen facilitates the formation of strong centers of dislocations pinning.