11.2-1 PLANE DEFECTS IN GaSe CRYSTALS.
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The investigation of defects in crystals of layer lattice semiconductors is of interest, since most properties of energy spectra (phonon, electron, exciton) of these essentially anisotropic materials can be explained by the influence of defects. Particularly GaSe crystals display strips of stacking faults ranging from 0.25 µm to 1.2 µm in width (Z.S.Basinski, D.B.Dove, E.Mooser, J.Appl. Phys., 1963, vol.34, N 3, 462–478) which are apparently very essential in formation of energy spectrum. GaSe crystals are readily deformed along the basal plane and only plane pile-ups of dislocations are observed under deformation. The latter together with the Burgers vectors are contained in basal planes only. We have made an attempt to stimulate creation of other possible dislocation configurations in the conditions when the energy of a stacking fault generation in a basal plane grows.
For this purpose deformation was performed by the four-point bend method at 4.2° K of liquid helium. Visual observation of a GaSe specimen subjected to bend at 4.2° K revealed bands on the faces, parallel and normal to the layers, similar to slip dislocation bands. The bands in the basal plane were oriented along ⟨11$\bar{2}$0⟩ and the assumed slip plane was inclined to the basal plane. The electron microscopy analysis showed that the stacking fault strips were 10 times less in width than after deformation at 300° K. Dislocation configurations were observed also in the planes inclined to the basal plane. These configurations made up of the dislocations bound by stacking faults of 0.05–0.02 µm in width were stable under the action of an electron beam, unlike the basal ones, arising at 300° K and easily migrating. Under sufficiently long action of an electron beam the stacking fault width slowly increased. A detailed study of this structure was impossible because of its fast annealing. The orientation of the assumed non-basal slip plane corresponds to the first order pyramidal slip plane in hexagonal metals. Analogous dislocation configurations appeared under shear deformation performed at the hydrostatic pressure of 11 kbar. The stacking fault strip width was also 10 times less approximately. It can be assumed that the non-basal slip occurred as well.

11.2-2 THE DEVELOPMENT OF DISLOCATION STRUCTURE DURING BENDING OF GALLIUM PHOSPHIDE.
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Sulphur doped LEC GaP (001) wafers were examined by high-temperature polarizing microscopy and by transmission electron microscopy during and/or after 4-point and/or 3-point bending at temperatures between room temperature and 640 °C. By in-situ deformation experiments the mechanism of dislocation formation at surface irregularities as a function of temperature has been investigated. The contrast of dislocations due to stress-induced birefringence is sufficient up to 400°C for observation of individual dislocations. At temperatures above 500 °C dislocation half loops which quickly run into the bulk crystal are formed at surface scratches. Small cracks open at lower temperatures. Slip band offset and slip band density measurements show that sources emit a constant number of dislocations and an increase of bending angle is accomplished by a decrease of the average slip band distance. An example of an active dislocation source at microdefects is presented. Burgers vectors and dislocation line directions of 1200 individual dislocations have been determined. During bending dislocations arrange themselves mainly parallel and perpendicular to the bending axis $\vec{a}$. Dislocations parallel to $\vec{a}$ are mainly 60° dislocations, those inclined to $\vec{a}$ are 30° and 0° dislocations. The macroscopic curvature is smaller than expected from Nye's law (J.F.Nye, Acta met. 1953, 1, 153). GaP deforms macroscopically by {111} slip. Moreover, {100}, {110}, and {113} slip planes have been identified on a microscopic scale.