

The deformation of the samples was studied in the following way. The crystal was loaded step-by-step according to a prescribed program. Dynamometric and strain gauge sensors were used to evaluate the load and the deformation. Then the sample was irradiated. Cycles of loading and photographing the sample were continued until failure occurred. Some of the x-ray photographs obtained in this way are shown in Fig. 1a-c.

Samples of three different orientations (I-III) were selected for the studies of plastic deformation; these are shown schematically in Fig. 2.

Figure 2 shows a schematic representation of deformation curves rather than actual experimental curves. This is because the small press-camera was not rigid enough and it did not permit one to

measure the deformation of the samples with the desired accuracy. During the tests we were able to record only the loads with accuracy; the deformations were determined in arbitrary units only.

The samples with orientation II were subjected to a parallel study in a standard testing machine. We shall refer to this machine-generated deformation curve throughout this paper.

I. The basal plane (0001) perpendicular to the loading axis. The side faces of the samples were $(10\bar{1}0)$ and $(11\bar{2}0)$ planes.

II. The basal plane (0001) and direction of the basal slip ($11\bar{2}0$) are oriented 45° from the loading axis.

III. The plane of a prism of the first kind ($10\bar{1}0$) is oriented perpendicular to the load axis. The side

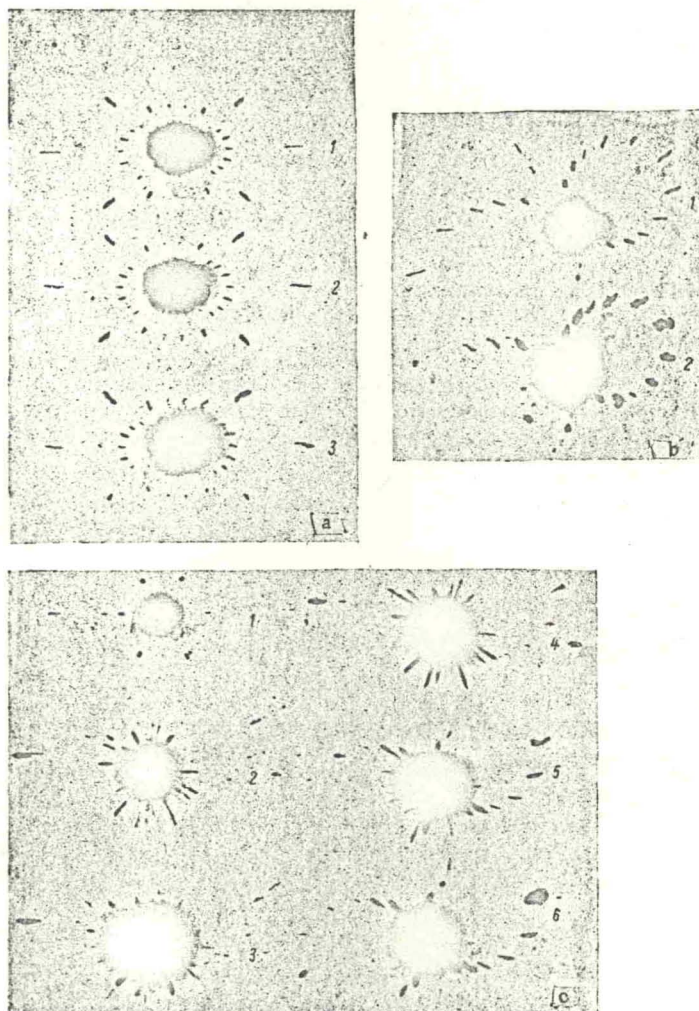


Fig. 1. X-ray photographs of initial (1) and deformed (2-6) samples with orientations I (a), II (b), and III (c).