# Research on Morphological Features of Monocrystals Grown in Conditions of High Gravitation

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The influence of strong gravitation on the process of the growth of crystals is a little investigated area. In terrestrial conditions, strong gravitation can be simulated by placing the growing material in a field of centrifugal forces [1].

The description of morphological features of monocrystals of aluminum of high purity (99.9999%) is given here, crystallized in a field of centrifugal forces with acceleration up to $10^3$g (g-acceleration of a terrestrial gravitation). The results of the research are given. The sample was located in a graphite test tube, which previously was exposed to digestion at 1273K. The sample and a graphite test tube were located in a quartz ampoule. After pumping out and soldering up, the ampoule was placed horizontally in a furnace, which was placed on the shoulders of a centrifuge. Crystallization was made at a speed of 1ñ3mm/min. The frequency of rotation of the centrifuge was 1500 of rev/min. Features observed on the surface of monocrystals were:

1. The cross section of the monocrystals had some rejections from the form of a circle;
2. On the surface of the crystal are strips of growth, which frame half of the surface; that is, the strips are divided into two equal halfcircles with unit which is taking place in the point of a surface perpendicularly which leaves tangential speed. Third, on the open end face of the crystal, which is on the part of an axis of rotation in the centrifuge, a deepening such as a cone or paraboloid [2] is formed.

We used a geometrical way of studying the deepening: the longitudinal cutting of a deepening and measurement of its form was made which then was compared on the diagram to the equations of a direct parabola. The results of graphic comparison have shown that the deepening on the open surface of the crystal has the form of paraboloid. We also used an optical way of [3] studying a deepening: from the received have made mould, which forms the basis for manufacturing a mirror. Analyzing the courses of rays reflected from this mirror using the equation

$$y^2+z^2=4qx$$

we have established that the deepening on an open surface of a crystal has the form of paraboloid.

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