Apparatus and Method for Determining the Orientation of a Crystallographic Plane relative to a Crystal Surface as well as Apparatus and Method for Cutting a Single Crystal in a Cutting Machine

Abstract

An apparatus and a method for determining the orientation of a crystallographic plane (100) relative to a crystal surface (2) are provided, in which the orientation is free from errors of adhesion of the crystal or contamination of the holders for the crystal. For this purpose, the angle which the crystal surface to be measured forms with a reference axis and the angle which the crystallographic plane forms with the reference axis are measured and subtracted. In a wire sawing apparatus with an X-Y positioning unit, next the desired correction is made with the aid of measurement of the orientation and at the same time the crystal is displaced in horizontal and vertical positions. As a result, there remains a further degree of freedom of rotation of the crystal in the cutting plane for achieving a cut which is free from forces perpendicular to the feed direction and wire direction, so that no tool deflection takes place or the cutting forces are minimal. Further, the precision of orientation is increased.

(Fig. 6)

162162

G00002