Magnetic properties of Dy_5Pd_2 single crystal

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The R_5Pd_2 compounds were investigated by Berkowitz *et al.* [1]. They reported the existence of four new R_5Pd_2-type (R=Gd, Tb, Dy, Ho) compounds. All these compounds crystallize in the cubic Dy_5Pd_2 - type of crystal structure which belongs to the space group Fd3m [2]. Recently, the magnetic properties of R_5Pd_2 (R=Tb, Dy, Ho, Er) intermetallic compounds were carried out [3]. The samples were obtained in polycrystalline form by the induction melting. The electrical resistivity, ac and dc magnetic susceptibility measurements show a complex transport and magnetic behaviour of these compounds mainly due to the frustration effect. The aim of this work was to obtain a good quality single crystal of Dy_5Pd_2, parameter thermal variation and magnetic measurements. Fig. 1 shows the X-ray Berg-Barrett topography of the Dy_5Pd_2 single crystal, grown by the Czochralski method from a levitated melt, witch confirms good quality of the obtained crystal. This compound crystallized in the cubic Dy_5Pd_2 - type of crystal structure. The lattice parameter was a=13.52 Å.

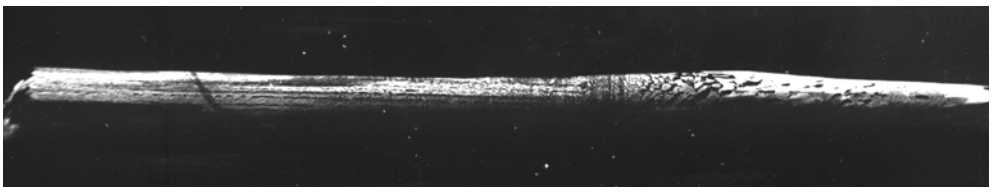

Fig. 1. Berg–Barrett topography of Dy_5Pd_2 single crystal.

The temperature dependence of the unit cell volume V of Dy_5Pd_2 was measurement. The unit cell volume V decrease linearly from 300 down to 50 K. Below this temperature the unit cell volume keeps almost constant values down to 10 K.

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