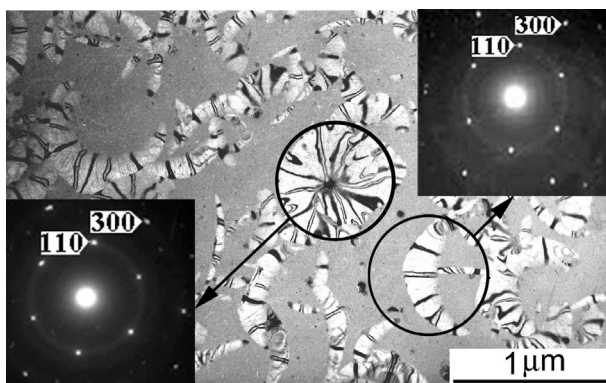


Orientational studies of Cr₂O₃ microcrystals growing in amorphous films by means of TEM bend contour technique, V. Yu. Kolosov,^a C. L. Schwamm^a and A. G. Bagmut^b, ^a*Physics Dept., Ural State Economic University, Ekaterinburg, Russia, Russia, and* ^b*National technical university "KhPI", Kharkiv, Ukraine.* E-mail: vladkol@usue.ru

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Bend contour technique [1] is very useful for transmission electron microscopy studies of lattice orientation, in particular for "transrotational" [2] crystals with internal lattice bending. The α -Cr₂O₃ crystals grown (400° C, 5 min.) in laser evaporated amorphous films are of 2 main morphology types:



round and crescent-like, Fig.1. [001] in the nucleus is, correspondingly normal and declined from the normal (through angle β) to the film plane. Contrary to selected area diffraction (giving the point patterns of the same lattice orientations) detailed analysis for "transrotational" crystals based on comparison of experimental micrographs and theoretical bend contour patterns (similar to stereographic projections of lattice planes) refines lattice orientations of crescent-like crystals ($\beta=12\pm 26^\circ$). Furthermore, it makes possible to study the relationship between parameters of internal lattice bending and parameters of crystal morphology for the crystals studied. We suppose that it is the strong (about 90 degrees per micrometer of crystal length) internal lattice bending (around the axis lying in the film plane) revealed from the bend contour patterns, that determines most of the regularities observed.

[1] V. Yu. Kolosov Proc. XII ICEM, Seattle, San Francisco Press, v.1 (1990), p. 574.

[2] V.Yu. Kolosov and A.R. Tholen, Acta Mater. v. 48 (2000), p. 1829.

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