on performed experiments, the limiting detectable content of micro and nanoparticles in mixtures can be regarded as the range between 0.1-5% (depending on the amount of material and the symmetry). Microanalytical methods at ICP were supported by projects RN19961997008, RN19982000005, RN20012003007, RN20052005001, VD20062008B10, VD20072010B15

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FA2-MS10-P04
E-mail: mvb@ihte.uran.ru

A characteristic feature of electron microscopic images of nanothin crystals is the presence of patterns of extinction bend contours [1]. In some cases the bend contour patterns exhibit a symmetry. A question arises if it is possible, in accordance with the general physical Curie principle, to judge of the real structure and the orientation of the nanothin crystals under study from the symmetry of bend contour patterns?

An electron microscopic examination was performed concerning the real structure and the orientation of nanothin crystals of hexagonal selenium whose electron microscopic images contained patterns of extinction bend contours with the mirror (Fig. 1a) and the inversion symmetry (Fig. 1b) or asymmetric contours (Fig. 1c).

Fig. 1. Microphotographs of nanothin selenium crystals whose contour patterns exhibit different types of symmetry (a ×10000), (b ×15000), (c ×10000)

The microdiffraction analysis of diamond-shaped crystals, whose bend contour panthers had a mirror symmetry relative to the symmetry plane passing through the short diagonal of the diamond-shaped crystal perpendicularly to its surface, gave mirror-symmetry diffraction patterns of symmetrically equal areas of the crystal. The symmetrically equal areas of the crystals, whose contour patterns exhibited an inversion symmetry or were asymmetrical, gave inversely symmetric or asymmetric electron micropatterns.

Thus, the study of the real structure and the orientation of nanothin crystals of hexagonal selenium, whose electron microscopic images contained bend contour patterns exhibiting different types of symmetry, suggested that the general physical principle of the Curie symmetry can be
used for analysis of the real structure and the orientation of nanothin crystals. A method has been proposed for analysis of nanothin crystals whose electron microscopic images include patterns of bend contours possessing a particular symmetry.


**Keywords:** selenium; crystals; symmetry