INTERNAL CONICAL REFRACTION IN TRANSPARENT MINERALS

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Research has been completed on the phenomenon of internal conical refraction in follow crystals: LFM, KNbO3, as well as in monocrystals of category of 8CaO?8(Mg, Fe)O?16SiO2. The results provided the effect of expansion and deformation of the conical refraction ring during its projection on the screen. It was determined how the final width of light beam and discrepancy of light radiation affect intensity allocation shown on the screen. It was shown that light beam of the smallest diameter was gained by using longitudinal mode of lazer radiation focused by long-focus lens. With telescopic system, a light beam of 1 mm and focus lens (focus distance of 103mm), the light radiation of 20-50 mkm diameter was gained (discrepancy in the focal area of the lens was approximately 4 corner minutes).Using Maxwell”s equations and the index surface, given by Fresnel’s equation, the ray's drift in a crystal was calculated (in crystallographic planes xz, xy, yz in accordance with the corner of the turn of the polarization vector relatively to z axis). It was theoretically shown (for the crystal of lithium formiate: LFM) that the light radiation intensity was allocated by ellipse on the screen. Theoretical results were proven by experimental data. The phenomenon of conical refraction can be used for study of mineral properties.