

BIREFRINGENCE IN $\text{Cu}_6\text{PS}_5\text{Br}$ CRYSTALS

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S u m m a r y

The studies of the birefringence $\Delta n(T)$ of $\text{Cu}_6\text{PS}_5\text{Br}$ single crystals below the ferroelastic phase transition temperature ($T < 268$ K), corresponding to the symmetry reduction from the cubic ($F43m$) to monoclinic (Cc) one, are carried out. The measurements of $\Delta n(T)$ are performed in the spectral range $(0.58 \div 1.0) \mu\text{m}$. Two temperature ranges with different $\Delta n(T)$ dependences are revealed: $T_s < T < T_c$ and $120 \text{ K} < T < T_s$, where T_c and T_s are the temperatures of the ferroelastic and superionic phase transitions, respectively. The $\Delta n(T)$ plot in the quoted temperature ranges is linear. The temperature coefficients $d(\Delta n)/dT$ for the whole temperature range are determined. The analysis of the results obtained is the evidence for a linear character of the temperature variation of the energy levels of the valence band maximum for $\text{Cu}_6\text{PS}_5\text{Br}$ crystals that determine the absorption edge under various polarizations of the incident light with respect to the crystallographical directions.