SYNTHESIS, CRYSTALLOCHEMISTRY AND PROPERTIES OF COMPOUNDS
LnAs₄X₇, LnAs₂X₄, Ln₃As₄X₉ AND LnAsX₃ - TYPE (Ln - Sm, Eu, Yb, X - S, Se, Te)

T.M. Ilyasov, R.F. Abbasova, P.G. Rustamov, M.I. Chiragov
Chemical Department, Baku State University, 23. Z.Khalilov, Baku, Azerbaijan, 370145

Chalcogenides of As and Ln belong to the different classes of semiconductors in which constituents have different electronic structures. The obtaining new materials on their base is the actual problem and it needs fundamental researchs in this field. In present work we attempted to characterise the properties and crystallochemistry of these ternary compounds.

The ternary chalcogenides are synthesized by two methods: direct synthesis of TRM and indirect synthesis with using different TRE compounds.

The synthesis was carried out at the interval of temperatures 850-1000K for 4-5 hours. The exit of product is 78-82%. The compositions of compounds are determined by the chemical analysis.

The monocrystals of ternary chalcogenides TRM are obtained as by the method of the directed crystallization as by the method of the chemical transporty reactions (CTR).

The dimension of needle crystals were about (6×2×2)×10⁻³m.

Some crystallochemical and physicochemical properties of the ternary chalcogenides were determined.

Likeness of the chemical compositions, type of crystal structure, valent electron concentration (VEC) quantity of atom permit to consider the compounds of AB₄X₇ [VEC 5.4 el/atom] AB₂X [VEC 5.3 el/atom], ACX [VEC 5.2 el/atom] as the single crystalline group. These compounds can be concerned to semiconductors formed by s-, f- and d-elements.