STUDY OF (T-x) PHASE DIAGRAM OF THE SOLID SOLUTIONS
Cs\(_x\)(NH\(_4\))\(_{1-x}\) LiSO\(_4\)

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Single crystals of solid solutions Cs\(_x\)(NH\(_4\))\(_{1-x}\) LiSO\(_4\) with x = 0–1 were grown by different evaporation methods. Content of Cs and NH\(_4\) in the grown samples was determined by the atomic absorption spectrometry. The (T-x) – diagram study was performed in the temperature range 100–530 K, using polarization-optic observations (domain structure, extinction, orientation optical indicatrix) together with results of heat capacity and birefringence measurements.

In was shown that the substitution of Cs - NH\(_4\) in a crystal NH\(_4\)LiSO\(_4\) affects temperatures of phase transitions in such a way (see Figure), that the range of the ferroelectric phase P2\(_{1}\)cn extends, and the ferroelastic P2\(_{1}\)/c11 phase disappears probably at x > 0.22. The character of the high-temperature phase transition does not change (\(2\theta/\theta_0 = 0.24 \pm 0.01\)), but magnitudes of the birefringence anomaly and enthalpy decrease. The low-temperature phase transition with magnification T becomes of more abrupt character: jumps of the birefringence d\(n\) and temperature hysteresis \(\Delta A\) are increased.

It was also observed that at substitution of NH\(_4\) - Cs in CsLiSO\(_4\) the phase transition temperature gradually increases and the rangearea of the ferroelastic P112\(_1\)/n phase expands. Moreover the influence of replacing on the of anomaly and the character of the phase transition was detected. A new phase boundary and a triple point were found in the middle part (x = 0.4 - 0.5) of the phase diagram.

This work was supported by RFBR (grant 00-15-96790).