

**LOW-TEMPERATURE THERMODYNAMIC PROPERTIES  
OF SINGLE-CRYSTAL  $\text{Na}_6\text{Mo}_{11}\text{O}_{36}$** *Bespyatov M.A., Shevelev D.S., Trifonov V.A.,**Nazarova A.A., Kuzin T.M., Gelfond N.V.*

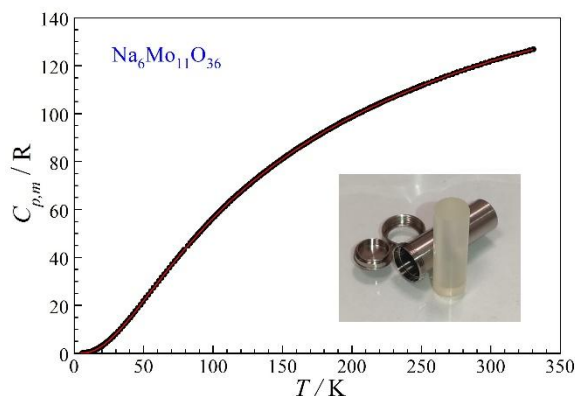
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Single-crystal  $\text{Na}_6\text{Mo}_{11}\text{O}_{36}$  is a promising material for cryogenic scintillating bolometers used in the search for neutrinoless double beta decay. Data on heat capacity are essential to determine the energy resolution of a cryogenic bolometer.

$\text{Na}_6\text{Mo}_{11}\text{O}_{36}$  single crystal was grown from the melt by the low-gradient Czochralski method [1]. The obtained single crystal was thoroughly characterized; its phase and elemental compositions were determined. The total impurity content is 0.015 wt%.

Heat capacity data for the  $\text{Na}_6\text{Mo}_{11}\text{O}_{36}$  single-crystal sample were obtained in the range of 5.9 K to 330 K using a BKT-20 adiabatic calorimeter. The description of the experimental setup and the results of test heat capacity measurements for benzoic acid and copper were reported previously [2]. The measurement results are shown in the Figure. This data was obtained for the first time.



Experimental heat capacity of the  $\text{Na}_6\text{Mo}_{11}\text{O}_{36}$  single crystal

The heat capacity data were used to calculate the characteristic Debye temperature at 0 K ( $\Theta_D(0) = 341 \pm 5$  K) and the thermodynamic functions in the range of 0–330 K. The results obtained suggest that the  $\text{Na}_6\text{Mo}_{11}\text{O}_{36}$  single crystal is a promising candidate for use in cryogenic scintillating bolometer technology.

1. Grigorieva V.D., et. al. // Cryst. Growth Des. 2025, V. 25. P. 986.

2. Bespyatov M.A. // J. Chem. Eng. Data 2025. V. 70. P. 3630.

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