

Accepted Manuscript

Title: Thermodynamic Properties of CaMoO_4 at High Temperatures

Authors: A.E. Musikhin, V.N. Naumov, M.V. Chislov, I.A. Zvereva



PII: S0040-6031(18)30032-7
DOI: <https://doi.org/10.1016/j.tca.2018.01.023>
Reference: TCA 77932

To appear in: *Thermochimica Acta*

Received date: 18-8-2017
Revised date: 27-1-2018
Accepted date: 30-1-2018

Please cite this article as: A.E.Musikhin, V.N.Naumov, M.V.Chislov, I.A.Zvereva, Thermodynamic Properties of CaMoO_4 at High Temperatures, Thermochimica Acta <https://doi.org/10.1016/j.tca.2018.01.023>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Thermodynamic Properties of CaMoO_4 at High Temperatures

A.E. Musikhin^{1,*}, V.N. Naumov¹, M.V. Chislov², I.A. Zvereva²

¹*Nikolaev Institute of Inorganic Chemistry Siberian Branch of Russian Academy of Sciences,
3, Acad. Lavrentiev Ave., 630090, Novosibirsk, Russia*

²*Saint-Petersburg State University, 7/9, Universitetskaya nab., 199034, Saint-Petersburg, Russia*

* *E-mail address: musikhin@niic.nsc.ru*

Highlights:

- Heat capacity of CaMoO_4 single crystal was measured in the 255–766 K range.
- Isobaric thermodynamic functions up to the 766 K were calculated.
- Melting point and enthalpy of melting were determined experimentally.
- Isochoric thermodynamic functions up to the melting point were calculated.

Abstract

We studied the thermodynamic properties of calcium molybdate (CaMoO_4) single crystal sample. Heat capacity was measured by DSC in the 255–766 K range. Isobaric thermodynamic functions (entropy, enthalpy, and Gibbs free energy) were calculated in the 298.15–766 K range. Melting point and enthalpy of melting were determined experimentally. We calculated isochoric heat capacity and thermodynamic functions up to the melting temperature of 1750 K by using low-temperature adiabatic calorimetry data within the framework of the effective sum method. We obtained the characteristic temperatures associated with the moments of the phonon density of states and its effective cutoff frequency. We estimated accuracy of the obtained results and compared the results with the known data.

Keywords: heat capacity; thermodynamic functions; effective sum method; cryogenic scintillators; calcium molybdate.

Download English Version:

<https://daneshyari.com/en/article/7062014>

Download Persian Version:

<https://daneshyari.com/article/7062014>

[Daneshyari.com](https://daneshyari.com)