



Home > Low Temperature Physics > Volume 45, Issue 4 > 10.1063/1.5093525



< PREV NEXT >

Published Online: 03 April 2019

IR Spectrometry studies of methanol cryovacuum condensates

Low Temperature Physics 45, 441 (2019); <https://doi.org/10.1063/1.5093525>

A. Drobyshev, A. Aldiyarov^{a)}, D. Sokolov^{b)}, A. Shinbaeva, and A. Nurmukan

View Affiliations



• Topics

◦ Topics

- Cryocondensates
- Glass transitions
- Absorption spectroscopy
- Laser interferometer
- Amorphous materials
- Infrared spectroscopy
- Absorption band
- Gas phase
- Vibrational spectra
- Thermodynamic states and processes

ABSTRACT

This article details the results of IR spectrometric studies on methanol cryovacuum condensates formed on a metal mirror at temperatures between 16–130 K. The vibrational spectra of gaseous methanol are compared to that of methanol condensed into the solid state. It is shown that the vibrational spectra have a significant dependence on the samples' history and subsequent changes in temperature. Analysis of the obtained spectra allows for the determination of the temperature at which the glassy state (GS) transitions to the supercooled liquid (SCL) state, $T_g = 102.6$ K. The temperature range in which the SCL state exists is identified as 103–118 K, and the temperature range in which the SCL crystallizes, is found to be 118–120 K.

REFERENCES

1.