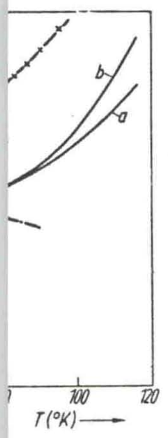
3

sothermal compressibility χ_T

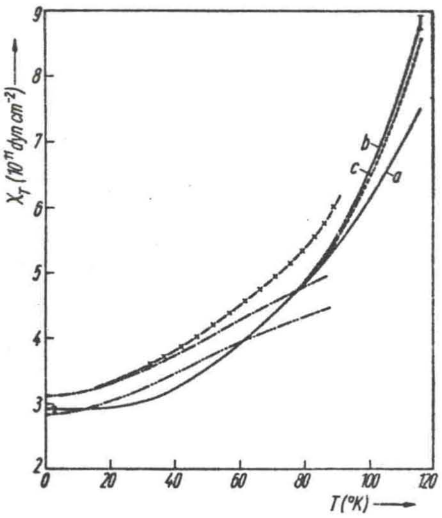
·t (13); □ Urvas et al. (10);
ork

r crystals revealed that the
s consisted of grains with dia-
f approximately 5 mm (5). After
als were grown, they were trans-
om the growing tube to the dilato-
amber.
· the compressibility measurements
re from 1 to 20 bar was applied to
inge of sample length was inde-
r lowered; i.e., no hysteresis



hermal expansion coefficient for
2,6)-Mie-Lennard-Jones potential;
roximation; a: measured with
in this work
inh. MLJ (12,6),
experiment

Fig. 4. Comparison of the experimental isothermal compressibility for Kr with theory (1). a: measured with X-rays (9, 10); b: bulk compressibility measured in this work; c: calculated from lattice and vacancy data (9)
—×— qh. MLJ (12, 6),
—·— anh. MLJ (12, 6),
—··— anh. MLJ (13, 6),
—— experiment



effect could be observed. In Fig. 1 and 2 the results for the volume thermal expansivity and the isothermal compressibility of Kr are plotted vs. temperature.

Manzhelii and coworkers have measured the bulk thermal expansivity of Kr in the temperature range from 14 to 69 °K and between 90 °K and the triple point (6 to 8). Their results agree well with our work within the experimental error (Fig. 1).

In the temperature region below 70 °K the curves for the thermal expansivity and the isothermal compressibility agree with those of Losee et al. (9) and Urvas et al. (10) as shown in Fig. 1 and 2. At higher temperatures there is a contribution from thermally created vacancies to these quantities. Above 80 °K the deviations of our measurements of the bulk expansivity from those measured by Losee et al. (9) with X-rays increase with temperature. Within experimental error the isothermal compressibility between 90 and 115 °K agrees with the values calculated by Losee et al. from their lattice data and the vacancy concentration (9).

Feldman et al. have calculated the thermal expansivity and the isothermal compressibility for several Mie-Lennard-Jones potentials in different approximations (1). The results are presented in Fig. 3 and 4.

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