by Trombe and Foex is identical to that discovered by Bridgman (1) under high pressure. Two papers were published later confirming these suppositions. Schuch and Sturdivant (12) described their previously carried out x-ray study of the crystalline structure of cerium at 90°K. They had then found the presence of two crystalline phases: with a normal face-centered cubic lattice (a = 5.12A) and with a close-packed lattice of the same type (a = 4.82A), that is with the same parameters as in paper (2).

Results of studies of the electrical resistivity of cerium at low temperatures (13) confirms that fact that the new more compact modification of cerium has a considerably lower resistivity than the modification which exists at normal temperature.

Lawson and Ting-Yan-Tang (2) expressed not only the supposition that the two mentioned modifications of cerium are identical but also carried out an approximate evaluation of the magnitude of the transition heat under pressure which would allow the construction of a p-T diagram satisfying this condition. According to their calculations the transformation heat of cerium must in this case be close to 0.04 ev, i.e. close to 900 cal/g atom. The experimental value of 880 ± 40 cal/g atom which we found (at 13 - 18°C) is very close to this value. It must be noted that the construction of the p-T curve directly from experimental data on the phase transition temperature as a function of pressure in the case of cerium is complicated by kinetic factors (friction and incomplete transition at low temperatures) [see (11)].

Conclusions

1. The application of the thermogram method for high pressures has been described; it is based on a comparison between the heat effects of the phase transformation of the substance studied and a standard at different (but close) pressures and constant temperature.

2. The heat of transition of cerium has been determined as equal to 880 ± 40 cal/g atom at temperatures of 13 - 18°C and a pressure of about 7000 kg/cm^2.

3. The results of the study confirm the identity of the cerium modification which takes place under high pressure with its low temperature modification.

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