

Melting of Rubidium at High Pressures

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Paper Presented at the American Physical Society Meeting
in Norman, Oklahoma, Feb. 27, 1965

As part of a continuing program of investigation of melting phenomena at elevated pressures, the melting point curve of Rb has been re-examined to about 60 kbar. Conflicting evidence as to the shape of the Rb melting curve exists in the literature, Bundy¹ having found a maximum at about 45 kbar using resistance measurements, while Newton, Jayaraman, and Kennedy² found a continuously rising curve to 50 kbar with differential thermal analysis. It was felt, therefore, that it would be of some interest to attempt to definitely establish if there is a maximum in the Rb melting curve.

The experiments were performed in a tetrahedral anvil high pressure apparatus, using a differential thermal conductivity technique.³ The sample cell used is shown in Figure 1. A graphite resistance heater was utilized in obtaining high temperatures, and either BN or pyrophyllite was used to encapsulate the sample. Two chromel-alumel thermocouples were placed as shown in Figure 1, and the measurements consisted of automatically recording the difference in temperature $\Delta T \equiv T_b - T_a$ as a function of the sample temperature T_a at constant pressure. If the thermal conductivity of the liquid differs from that of the solid, a discontinuous