

Table 2. Transition pressure (P_{tr} , kb) for the Fm3m ⇌ Pm3m phase change in the potassium and rubidium halides at 25°C

| Salt | Bridgman 1945[25] | Daniels, <i>et al.</i> 1966[31] | Kennedy and LaMori, 1962[18] | Knof and Maisch, 1963[26] | Larson, 1965[29] | Piermarini and Weir, 1962[4] | Pistorius, 1964[11, 12] | Pistorius and Snyman, 1964[13] | This work | Average Value |
|------|----------------------|---------------------------------------|------------------------------------|---------------------------------|---------------------|------------------------------------|----------------------------|--------------------------------------|-----------|-------------------------|
| KF | | | | | | 35 | | 14.6 ± 1.3 | | None observed |
| KCl | 19.7 | | 18.28 ± 0.21 | | 20.0 | | 19.27 ± 0.08 | | | 19.55 ± 0.13 19.4 ± 0.3 |
| KBr | 18.0 | | 17.88 ± 0.06 | | 18.5 | | 17.43 ± 0.07 | | | 17.99 ± 0.28 18.0 ± 0.2 |
| KI | 17.8 | | 17.48 ± 0.24 | | | | 17.34 ± 0.05 | | | 18.27 ± 0.19 17.7 ± 0.3 |
| RbF | | | | 33 | | 12 | | 6.1 | | 34.47 ± 0.38 33.8 ± 0.8 |
| RbCl | 4.90 | | | | | | 5.28 | | | 5.68 ± 0.14 5.32 ± 0.24 |
| RbBr | 4.50 | | | | | | 4.20 ± 0.2 | | | 4.92 ± 0.06 4.57 ± 0.35 |
| RbI | 3.96 | 3.54 | | | | | 3.59 ± 0.16 | | | 3.68 ± 0.05 3.69 ± 0.11 |

Table 3. Transition volume ($-\Delta V_{tr}$, cm³/mole) for the Fm3m → Pm3m phase change in the potassium and rubidium halides at 25°C

| Salt | Adams and Davis, 1962[8] | Bridgman, 1945[25] | Genshaft <i>et al.</i> , 1967[30] | Jacobs, 1938[6] | Jamison, 1957[7] | Nagasaki and Minomura, 1964[9] | Pistorius and Snyman, 1964[13] | Weir and Piermarini, 1964[5] | This work | Average value |
|------|--------------------------------|-----------------------|---|--------------------|---------------------|---|--------------------------------------|------------------------------------|-------------|------------------|
| KF | | | | | | | 1.0 | 2.49 | | None Obs. |
| KCl | | 4.20 | | | | 3.85 | | 6.85 | 4.11 ± 0.10 | 4.05 ± 0.17 |
| KBr | | 4.55 | | | | | | 8.35 | 4.17 ± 0.11 | 4.36 ± 0.19 |
| KI | | 4.50 | | | 4.50 | | | 11.8 | 4.41 ± 0.15 | 4.47 ± 0.13 |
| RbF | | | | | | | | 3.70 | 1.83 ± 0.29 | |
| RbCl | 6.55 | 6.00 | 6.30 | | | | | 5.76 | 6.95 ± 0.11 | 6.30 ± 0.35 |
| RbBr | | 6.55 | | | | | | 6.60 | 7.43 ± 0.18 | 6.86 ± 0.39 |
| RbI | 9.65 | 7.50 | | 7.9 | | | | 8.26 | 8.10 ± 0.10 | 8.28 ± 0.31 |

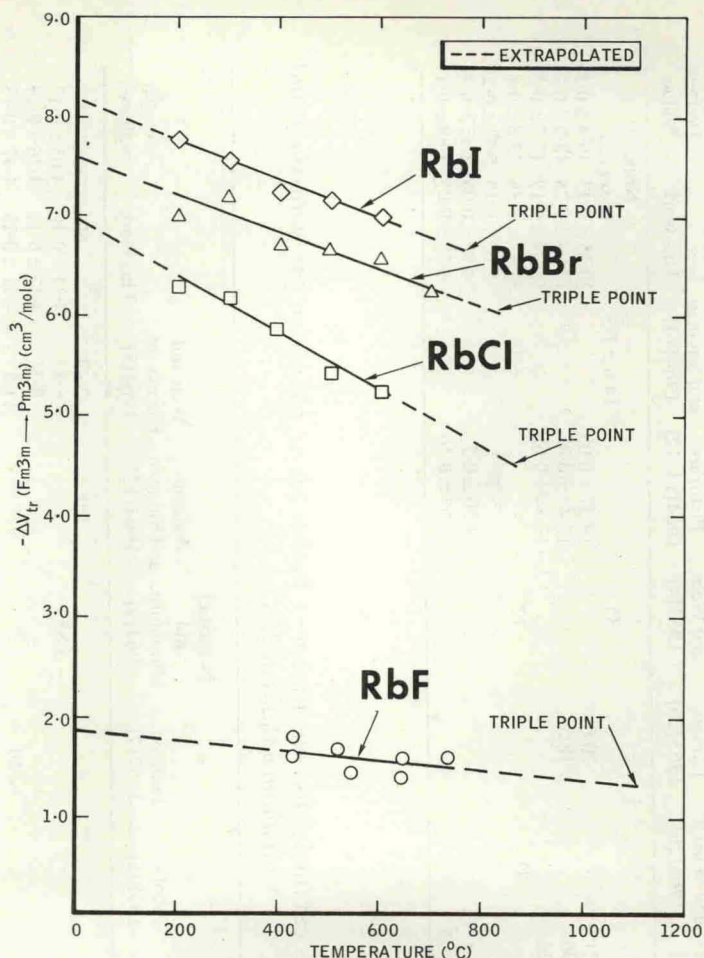


Fig. 4. $\Delta V(\text{Fm}3\text{m} \rightarrow \text{Pm}3\text{m})$ vs. T for the rubidium halides.

perature data by use of equation (2). The pressure-temperature coordinates of the $\text{Fm}3\text{m} \rightleftharpoons \text{liquid} \rightleftharpoons \text{Pm}3\text{m}$ triple point for these salts were determined from the intersection of the melting curves of the $\text{Fm}3\text{m}$ and $\text{Pm}3\text{m}$ phases at the $\text{Fm}3\text{m} \rightleftharpoons \text{Pm}3\text{m}$ phase boundary. The melting curves of the $\text{Fm}3\text{m}$ and $\text{Pm}3\text{m}$ phases were drawn through the data points of Clark[22] and of Pistorius [23] in order that the intersection of these two curves would fall on the $\text{Fm}3\text{m} \rightleftharpoons \text{Pm}3\text{m}$ phase boundary obtained in this work. Triple point coordinates obtained for the salts KCl , KBr and KI are shown in Fig. 1; coordinates for the rubidium halides are shown in Fig. 2.

These triple point P - T coordinates are compared with the P - T coordinates given by Clark[22] and by Pistorius[23] in Table 4.

Potassium halides

Potassium fluoride was examined at pressures up to 45 kb at approx. 100° intervals from room temperature up to 800°C. However, we fail to find the phase transition reported by Weir and Piermarini[5] and by Pistorius and Snyman[13]. Pistorius *et al.* found the volume change of this transition to be small, i.e. 0.5 per cent. The sensitivity of the method used here is more than adequate to detect a phase transition with such a small