

Fig. 1. Calculated Permittivity vs. Pressure at 20°C Compared to Leonidova's Data.

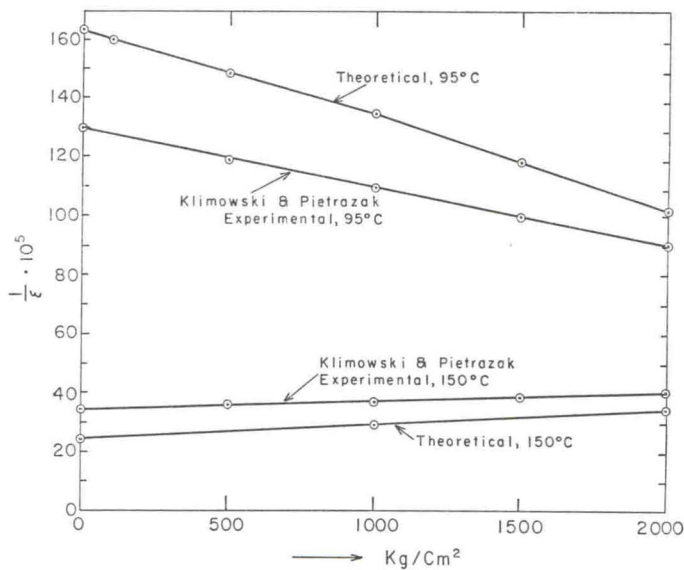


Fig. 2. Reciprocal Permittivity vs. Pressure at 95°C and 15°C.

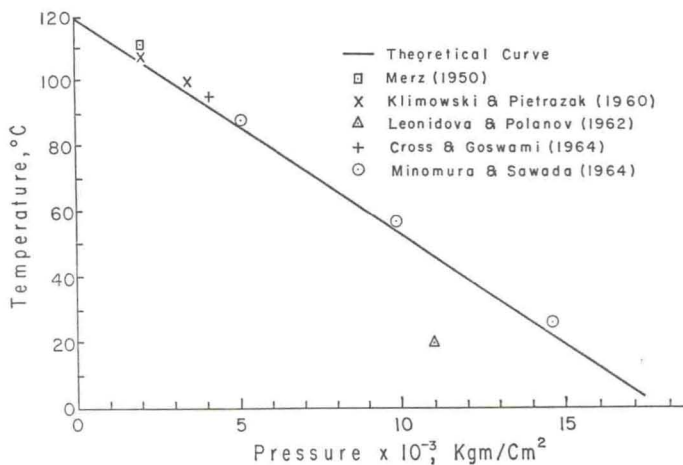


Fig. 3. Variation of Curie Temperature with Hydrostatic Pressure in BaTiO<sub>3</sub> Single Crystals.

various authors are also presented in the same graph for comparison purposes. The agreement between the theory and experiment is excellent except that Leonidova and Polanov's<sup>3)</sup> datum due to the reasons above. Recently Samara<sup>12)</sup> reported the transition pressure of 18.5 Kbar at 20°C compared to the theoretical value of 14.6 Kbar in this work.

From the equation (8), one could also compute the variation of  $\epsilon_a$  with pressure, although no such experimental data are available.

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#### References

- 1) W. J. Merz: Phys. Rev. 77 (1950) 52.
- 2) J. Klimowski and J. Pietrzak: Acta Physica Polonica XIX, No. 3 (1960) 369.
- 3) J. Klimowski: Phys. Status solidi 2 (1962) 456.
- 4) G. G. Leonidova and I. N. Polanov: Fiz. Tverd. Tela 4 (1962) 2613.
- 5) G. Shirane and A. Takeda: J. Phys. Soc. Japan 7 (1952) 1.
- 6) A. K. Goswami: Ph. D. Thesis, Penn. State University, University Park, Pa. (Sept. 1964)
- 7) W. R. Buessem L. E. Cross and A. K. Goswami: J. Amer. Ceram. Soc. Vol. 49, No. 1 (1966) 33.
- 8) A. F. Devonshire: Phil. Mag. 40 (1949) 1040.
- 9) A. F. Devonshire: Phil. Mag. 42 (1951) 1065.
- 10) L. E. Cross and A. K. Goswami: U.S.A.E.C., AT (30-1)-2581 (1964) 38.
- 11) S. Minomura and S. Sawada: Japan. J. appl. Phys. 3 (1964) 562.
- 12) G. A. Samura: Paper No. 26-B-F, presented at the High Pressure Conference, Amer. Cer. Soc. held at Pittsburgh, Sept. 1965.