

of the ground state would increase with pressure more rapidly than the excited state energy, causing a lowering of the transition energy.

The effect of pressure on the copper ion in alkali halide lattices

Experiments with both cuprous and cupric ion impurity in alkali halides confirm the findings of BOESMAN and DEKEYSER⁽¹⁶⁾ to the effect that the absorption band at approximately 2500 Å is caused by copper in the cupric state. This band has been studied as a function of pressure to 117,000 atm in potassium bromide and to 50,000 atm in potassium chloride (see Fig. 9). Very similar shifts occur in the two cases; strongly to higher energy except at phase transitions. This leads to the conclusion that the band results from an almost completely internal transition, probably between *d* electron levels split by the crystal field.

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REFERENCES

1. SEITZ F., *J. Chem. Phys.* **6**, 150 (1938).
2. FROMHERZ H. and MENSCHICK W., *Z. Phys. Chem.* **B3**, 1 (1929).
3. FROMHERZ H., *Z. Phys.* **68**, 233 (1931).
4. KATO M., *Sci. Pap. Inst. Phys. and Chem. Res., Tokyo* **41**, 113 (1943); **42**, 35 and 95 (1944).
5. PRINGSHEIM P., *Rev. Mod. Phys.* **14**, 132 (1942).
6. KYROPOULOS S., *Z. anorg. Chem.* **154**, 308 (1926).
7. FITCH R. A., SLYKHOUSE T. E. and DRICKAMER H. G., *J. Opt. Soc. Amer.* **47**, 1015 (1957).
8. FORRO M., *Z. Phys.* **58**, 613 (1930).
9. WILLIAMS F. E., SEGALL B. and JOHNSON P. D., *Phys. Rev.* **108**, 46 (1957).
10. LUSHCHIK N. E. and LUSHCHIK C. B., *Trud. Inst. Fiz. i Astron. Akad. Nauk Est. S.S.R.* **6**, 149 (1957).
11. HILSCH R., *Z. Phys.* **44**, 860 (1927).
12. SMAKULA A., *Z. Phys.* **45**, 1 (1927).
13. EPPLER R. A. and DRICKAMER H. G., *J. Phys. Chem. Solids* **6**, 180 (1958).
14. LIDIARD A. B., *Handbuch der Physik* Bd. 20, S.246. Springer, Berlin (1957).
15. FREDERICKS W. J. and SCOTT A. B., *J. Chem. Phys.* **28**, 249 (1958).
16. BOESMAN E. and DEKEYSER W., *Physica, s'Grav.* **24**, 52 (1958).