

REPORT ON THE THESIS OF MR. T. S. KRISHNAN

FOR THE PH.D. DEGREE OF BOMBAY UNIVERSITY

The thesis submitted by Mr. T. S. Krishnan on "Investigations on the Raman Spectra of Crystals" contains a number of interesting studies, which in many respects form a valuable contribution to the present knowledge of solid state physics. On a critical examination of the thesis one can easily notice that a good portion of it comprises of original ~~and new~~ work while the rest is concerned with improvements upon earlier investigations.

Mr. Krishnan has studied the Raman spectra of a number of single crystals, and has tried to explain the observed frequencies in terms of the internal and external oscillations of the unit cell of the crystal. Additional data have been obtained in many cases through studies on the dependence on orientation and temperature, of the intensity, position and width of the Raman lines. In this respect the chapters on cadmium sulphate, anhydrite and strontianite deserve particular mention. The results presented are in good concord with similar investigations carried out earlier on other substances and help us in understanding better the vibration spectra of crystals.

It is evident that Mr. Krishnan has taken meticulous care regarding all the experimental details, and the spectra he has reproduced, as well as the microphotometer records, amply substantiate this view. It is indeed creditable that even with fairly small specimens of the crystals, he has succeeded in recording their spectra clearly, and also ~~to~~ ⁱⁿ studying the variation of the frequency, width and intensity of the Raman lines with ~~respect to~~ ^{the} orientation of the crystal and ^{the} temperature over a wide range. Interpretation of the data based on current group theoretical concepts ~~x~~ has also been attempted in many cases.

It can be said without any hesitation that Mr. Krishnan has an excellent grasp of both the experimental and theoretical aspects of this branch of science.

We therefore strongly recommend that Mr. T. S. Krishnan ~~may~~ be admitted to the Ph.D. degree of the Bombay University.

U. S. Krishnan

Sir K. S. KRISHNAN

EXTERNAL EXAMINER.

R. S. Krishnan

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INTERNAL EXAMINER.