

ABSTRACTS (

DEPARTMENT OF PHYSICS

22. RAMAN SPECTRUM OF DANBURITE. P. S. Narayanan, *Proc. Ind. Acad. Sci.*, 1951, **34 A**, 387-90.

The Raman spectrum of Danburite ($\text{CaB}_2\text{Si}_2\text{O}_8$) has been investigated using λ 2537 as exciter. The recorded spectrum exhibits 30 lines, 14 of which have been observed for the first time and it is found that the frequency shifts of 4 Raman lines correspond very nearly to four infra-red maxima observed by Matossi and Krueger. It is believed that this is accidental, and also the difference between the theoretically expected number of shifts and that actually observed may arise because of two reasons. It is likely that more than one mode have very nearly the same frequency and/or those modes which involve a movement of the boron atoms may not have appreciable intensity. For a more detailed analysis of the spectrum a detailed investigation of the effect of crystal orientation, on intensity and state of polarisation of the Raman lines is necessary.

23. ANALYSIS OF THE RAMAN SPECTRA OF POTASSIUM AND AMMONIUM ALUMS. V. M. PADMANABHAN, *Proc. Ind. Acad. Sci.*, 1951, **34 A**, 396-402.

The paper reports the results of a detailed study of the Raman spectra of single crystals of potassium and ammonium alums using λ 2536 radiation as exciter. The recorded spectrum of each crystal exhibits 10 lattice lines and 13 internal lines. A study has also been made of the effect of crystal orientation on the polarisation of the Raman lines. From the observed variations in intensity and polarisation, proper assignments have been given both to the external and internal lines.

24. MAGNETO-OPTIC DETECTION OF RADIO-FREQUENCY RESONANCE. S. Ramaseshan and G. Suryan, *Curr. Sci.*, 1951, **20**, 264.

It is shown that the Zeeman splitting of the spectral lines arising from transitions from a higher level to a level under the action of a radio frequency field will be slightly different before and after resonance. It is therefore suggested that radio frequency resonance among Zeeman levels can be detected as a change in the magnetic-optic rotation of any substance, this effect being most prominent near the absorption frequency.

25. PARAMAGNETIC RESONANCE IN TRIVALENT MOLYBDENUM. S. Ramaseshan and G. Suryan, *Physical Review*, 1951, **84**, 593.

The paramagnetic resonance spectrum of trivalent molybdenum in green crystals of K_2MoCl_5 was studied at 3 cm. The g value is 1.76 ± 0.02 and $2 \Delta H_{\frac{1}{2}} = 190$ oersteds.

26. ON THE TEMPERATURE OF MINIMUM COMPRESSIBILITY OF IONIC SOLUTIONS. V. S. Venkatasubramanian, *Curr. Sci.*, No. 1951, **20**, 291-2.

It is found that the temperature of minimum compressibility of water is lowered by the addition of ions and this fact is explained qualitatively on the basis of the structural relaxation in the compressibility of water.

27. X-RAY MICROSCOPE EMPLOYING LAUE REFLECTIONS. G. N. Ramachandran and Y. T. Thathachari, *Curr. Sci.*, 1951, **20**, 314.

The optical laws of reflection apply also to the Bragg reflection, with the difference that in the latter case only particular wavelengths are reflected. Consequently, if the lattice planes in a crystal plate are curved to the form of a spherical concave mirror, focussed images can be obtained. This principle has been realized in practice by using a thin sheet of mica and obtaining the required curvature by a difference of pressure on the two sides. Images of a wire mesh with a magnification of up to 20 times have been thus obtained and are reproduced in the paper.

DEPARTMENT OF CHEMICAL TECHNOLOGY AND
CHEMICAL ENGINEERING

5. PRESSURE DROP STUDIES IN FLUIDISED BEDS. A. V. Ramana Rao and
S. S. Ghosh.

Pressure drops obtained by counter-gravity flow of air through finely divided beds of sand and coal have been investigated. This type of flow does not differ essentially from co-gravity flow provided no bed expansion occurs. Pressure drop data in fluidised beds in a $\frac{7}{8}$ " glass tube were obtained and discussed and possible explanations for the slugging and channeling behaviour of fluidised beds have been proposed. An empirical equation given for the calculation of pressure drops in fluidised beds has been verified and it has been shown that it can be used with a fair degree of accuracy.