

## The Dipole Moments of the Alkali Halides

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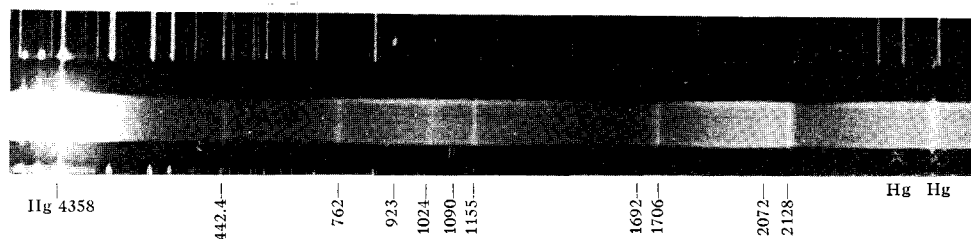


FIG. 1.

### Raman Spectrum of Deutero-Acetaldehyde

The Raman spectrum of a very pure sample of deutero-acetaldehyde sent to me by Professor Zanetti of Columbia University was photographed with the large prism spectrograph of 1 meter focus described in earlier papers. Excitation was by Hg 4358, filters of sodium nitrite and praseodymium being employed, the latter to remove the continuous background of the arc between 4358 and 4915 which was rather strongly scattered. The first spectrum taken indicated that some fluorescent light was present which blotted out all but the strongest lines. An exposure to unfiltered light for some hours destroyed the impurity causing fluorescence and a very satisfactory spectrum was obtained, which is reproduced in Fig. 1. The discontinuities in the continuous spectrum are of course due to the selective absorption of the praseodymium.

The wave number differences of the lines are given in Table I.

TABLE I.

Deutero-acetaldehyde V	Acetaldehyde (Kohlrausch and Keppel <sup>1</sup> )
422.4	512
762	887
1024	914
1090	1111
1153	1352
1692	1392
1706	1428
2072	1715
2128	2732
	2836
	2915
	2966
	3005

The tube, of fused quartz provided with a flat polished window of the same material was filled for me by Professor Zanetti. Publication of this note has been delayed for three months as it was hoped that deutero-paraldehyde would soon be ready for examination.

R. W. WOOD

The Johns Hopkins University,  
Baltimore, Maryland,  
June 22, 1936.

### The Dipole Moments of the Alkali Halides

In our paper on the measurement of dipole moments of the alkali halides,<sup>1</sup> a discussion of the uncertainties in the electric field strength was inadvertently omitted. This was unfortunate, since the possibility exists of considerable error in this quantity. The important question is whether the error could be great enough to account for the discrepancy between our results and those of Scheffers.<sup>2</sup> This does not appear to us to be probable, but it would be desirable to repeat the measurements with a more satisfactory source of d.c. high potential.

The difficulty with the transformer and kenetron as a source of potential is that the effective potential on the Rabi plates varies with the amount of leakage current. The only direct method of measuring the potential on the Rabi plates is by the use of a spark gap. The results of this method, while reproducible, are too uncertain to be satisfactory. It is, of course, possible to observe the peak voltage and wave form of the transformer itself with an oscillograph, and this has been done. The difficulty arises in determining the leakage current under operating conditions. The charging current through the kenetron was small, but not zero, so that the effective voltage was estimated at something less than the peak voltage. If the peak voltage were actually maintained on the plates, which would mean no leakage current, our moments as calculated would be about 20 percent too high. It appears to us to be very unlikely that this is the case. The most probable values for our results are those that are published. It is suggested there that the uncertainty was at least 10 percent. If weight is given to the results of Scheffers and certain theoretical considerations, one might suspect that our results are perhaps too high by this amount, but it does not appear possible to account for the difference between our results and those of Scheffers, solely on the basis of errors in our work.

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<sup>1</sup> W. H. Rodebush, L. A. Murray, Jr. and M. E. Bixler, *J. Chem. Phys.* **4**, 372 (1936).

<sup>2</sup> H. Scheffers, *Physik. Zeits.* **35**, 425 (1924).