

Letter to the Editor

THE ULTRAVIOLET ABSORPTION SPECTRUM OF O-FLUORO-CHLORO-BENZENE

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The ultraviolet absorption spectrum of ortho-fluoro-chloro-benzene, in hexane solution, was investigated by Conrad-Billroth (1936). The present report deals with the work on the vapour absorption spectrum. It is with a view to study the infra-red, Raman and the ultraviolet absorption spectra of several of the dihalogen derivatives of benzene, in particular of ortho, meta and para-fluoro-chloro, fluoro-bromo and fluoro-iodo-benzenes (pure samples of which are specially prepared by Dr. G. C. Finger of the Illinois State Geological Survey and presented to the author), that the present work has been started. The ultraviolet spectrum was photographed with path lengths of 25, 50 and 75 cm., at different temperatures ranging from -15 to about 80°C on the Hilger Quartz medium and Littrow instruments.

Two regions of absorption were observed. (i) A continuous one below 2150\AA and (ii) a discrete one in the region $2700\text{-}2400\text{\AA}$. These two regions merge together at higher vapour pressures. The bands in the discrete region are red degraded

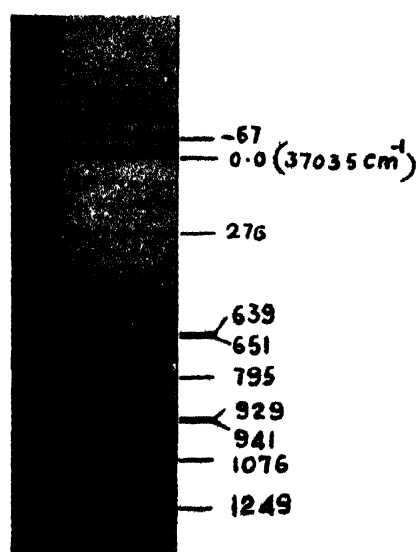


Figure 1

and about 125 of them could be measured. This system can be interpreted as due to the allowed electronic transition $A'-A'$. In conformity with this, a strong 0-0 band and progressions and combinations of many totally symmetrical vibrations were observed. The strong band at 37035 cm^{-1} was taken as the 0-0 band. Most of the bands could be interpreted on the basis of eight ground state and eight excited state frequencies. These, together with other data, are collected in Table 1 which is self explanatory.

A characteristic feature of the spectrum is the appearance of fairly intense bands towards the longwavelength side of almost all the strong bands, separated by 35, 67 and 125 cm^{-1} , the 67 cm^{-1} separation being the most pronounced one. These could be interpreted as the $v-v$ transitions of some of the low lying non-totally symmetrical vibrations. A portion of the spectrum is reproduced in figure 1.

A detailed discussion of the analysis will be published shortly, along with that on the meta isomer which is in progress.

TABLE I
Ground and excited state frequencies of O-F.Cl.C₆H₄.

Raman data			U.V. absorption data		Probable assignment
$\Delta\nu$	Int	ρ	Ground state	excited state	
375	7	.41	370	276 (w)	one of the e_g^+ components of benzene
680	11	.13	683	639 (st)	
755	1	—	751	651 (m)	C-F bending
826	9	.18	829	795 (st)	Totally symmetrical carbon stretching vibrations
1030	12	.08	1031	929 (st)	
1070	4	.34	1078	941 (st)	
1126	6	.49	1128	1076 (st)	
1237	8b	.15	1243	1249 (ms)	C-F stretching

ACKNOWLEDGMENT

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REFERENCES

- Conrod-Billroth, H, and Forster, 1936, *G. Zeit. F. Phys. Chem. B.* **33**, 311.
Hertz, E. 1946, *Monatsh. fur Chemie.* **76**, 1-26.

ERRATA

FLEXURE OF THIN ELASTIC PLATES UNDER SPECIFIED EDGE TRACTIONS

BY V. CADAMBE, R. K. KAUL AND S. G. TEWARI

National Physical Laboratory of India, New Delhi.

Indian Journal of Physics, Vol. XXIX No. 9, Sept. 1955

1. Page 404—Fourth line from bottom: read *natural* for *natural*
2. Page 406—Equation 5: read \oint for \int
3. Page 407—(a) Equation 9: read $2(1 + \nu)T_{xy}^2$ for $(1 + \nu)T_{xy}^2$
 (b) Fourth line from bottom: read

$$\dots\dots \frac{1 + \nu}{2} \left(\frac{\partial V}{\partial x} + \frac{\partial U}{\partial y} \right)^2$$
4. Page 408—(a) Third line from top: read

$$\frac{1}{D(1 - \nu^2)} \text{ for } \frac{1}{2D(1 - \nu^2)}$$
 (b) Tenth line from top: read

$$\dots\dots \delta V \int dx dy \text{ for } \delta V dx dy$$
5. Page 409—Fourth line from top: read $\oint \left[\left(\frac{\partial U}{\partial x} - D\phi \right) \cos x \dots \right]$
 for $\oint \left[\frac{\partial U}{\partial x} - D\phi \right) \cos x \dots \right]$
6. Page 413—Fourth line from top: read $(Q_n - \partial T_{nt} / \partial s)$
7. Page 414—Fourth line from bottom: read fig. 6 for fig. 5.
8. Page 415—(a) Equation 25(a): read $(V_1 - V_3 + U_2 - U_4)$
 (b) Equation 25(b): read $(V_1 - V_3 + U_2 - U_4)$
 (c) Second line from bottom: read $\frac{1}{12} (V_{12} - V_0)$
9. Page 416—Eleventh line from top: read $(F_5 - F_6 + F_7 - F_8)$