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Letters to the Editor

Near ultra-violet absorption spectrum of meta-methoxy phenol

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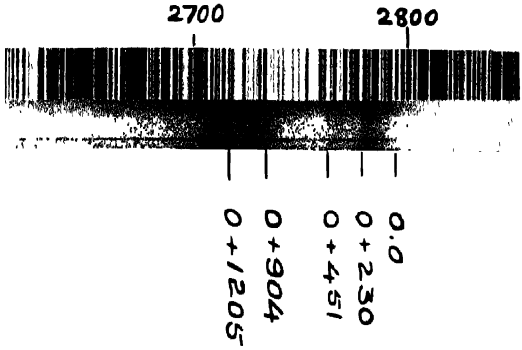
(Plate 10)

The observation of a number of fundamental frequencies characteristic of excited and ground states in the absorption spectrum of phenol in the vapour phase (Matsen *et al* 1945) has led to the study of similar properties in substituted phenols. In this context the study of ultra-violet absorption spectrum of meta-methoxy phenol has been taken up

The absorption spectrum of meta-methoxy phenol being redistilled in vacuum, was photographed on a Hilger medium quartz spectrograph having a dispersion of about 12.6Å mm^{-1} at 2800Å, using a vapour column of 75 cm in the temperature range of 0° to 90°C. The spectrum thus recorded at 60°C consists of fairly intense system of bands in the region $\lambda 2810 - \lambda 2680$Å, as can be seen from plate 10. With an increase of temperature of the vapour column to about 90°C, a total absorption was observed in this region and no additional bands recorded on the longer wavelength side. The spectrum was also studied taking a thin film of the sample pressed between two quartz plates at the room and liquid oxygen temperatures. The spectrum in the solid state at both the temperatures has indicated only two broad intense bands in the same region where a discrete band system was observed in the vapour state.

The meta-methoxy phenol molecule may be taken as having a C_s symmetry. Assuming the electronic transition as giving rise to a discrete band system to be an allowed one, the origin of the system is identified at 35754 cm^{-1}, being the strong band on the longer wavelength side of the spectrum at the minimum possible temperature (about 30°C). The remaining bands could be analysed in terms of five upper states 182, 230, 451, 904 and 1205 and two ground states 173 and 149 fundamental frequencies of the molecule. The frequencies together with the visual estimate of intensity of bands and modes of vibration are given in table 1.

A comparision of the shift of the electronic transition upon substitution in ortho, meta and para positions in the methoxy phenols (Suryanarayana & Rao 1956, Sen 1956) with other isomeric disubstituted phenols shows the usual relation $o- < m- < p-$ and is towards the longer wavelength side of benzene forbidden transition.



Absorption Spectrum of meta-methoxy phenol (vapour at 60°C)

TABLE 1

Band No.	Wave number (cm^{-1})	Difference	Visual intensity	Assignment	Mode of vibration
	35409+				
1	35581	−173	ms	0−173	
2	35605	−149	ms	0−149	
3	35754	0	s	0,0	
4	35936	182	vs	0+182	Totally symmetric vibration.
5	35984	230	vs	0+230	C-OH bending.
6	36044	290	s	0+451−173 or 0+451−149	
7	36107	353	ms	0+2×182	
8	36162	408	ms	0+230+182	
9	36205	451	s	0+451	α_1 component of 606 cg^+ vibration of benzene.
10	36658	904	s	0+904	C-C bending.
11	36846 36867*	1092	s	0+904+182	
12	36959	1205	s	0+1205	C-H planar bending.
13	37095	1341	ms	0+451+904	
14	37154	1400	ms	0+1205+182	

* Frequencies observed in solid state.

ms - medium strong, s—strong, vs—very strong.

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Comment on a note on the linear flow of a viscous incompressible conducting fluid past an infinite flat plate with constant suction in the presence of a transverse magnetic field

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Recently Dube (1969) has studied the effects of the transverse magnetic field and constant suction on the flow of an incompressible electrically conducting fluid when the free-stream velocity varies linearly with time. It should be pointed out that his solutions for velocity and the skin-friction as given by equations