

E.S.R. SPECTRUM OF THE CATION RADICAL OF PERFLUORONAPHTHALENE, $(C_{10}F_8)^+$ *

C. Thomson and W.J. MacCulloch

(Department of Chemistry, University of St. Andrews, St. Andrews,
Fife, Scotland).

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Recently, Bazhin¹ reported the preparation of $(C_{10}F_8)^+$ by reaction of $C_{10}F_8$ with oleum, SO_3 and SbF_5 . Their assignment of the spectrum is, however, incorrect since they did not observe the outside lines.

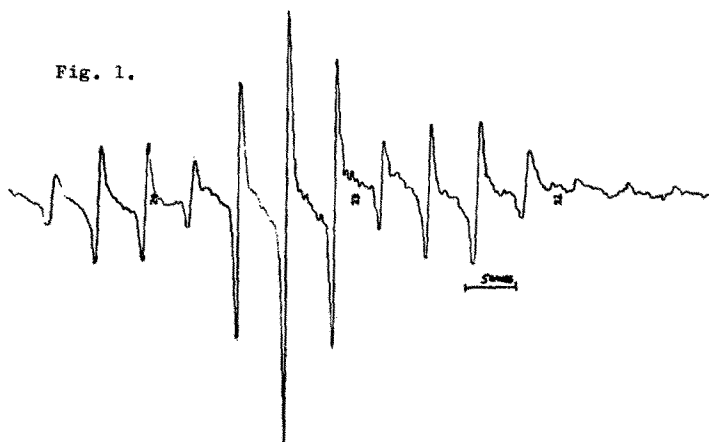
We have prepared $(C_{10}F_8)^+$ using the new oxidising medium $SbCl_5/SO_2$. A 21 line spectrum is expected and observed, since $a_{\alpha F} = 19.0 \pm 0.1$ gauss, $a_{\beta F} = 4.7 \pm 0.1$ gauss i.e. $a_{\alpha F}/a_{\beta F} \sim 4$. We have also prepared $(C_{10}F_7H)^+$ in the same way. There are pronounced linewidth variations in the spectra, and details of the experimental technique and theoretical analysis will be published in due course.

The chemistry, E.S.R., and U.V. spectroscopy of these solutions are currently being investigated, both with fluorocarbons and hydrocarbons. The ratio $a_{\alpha F}/a_{\beta F}$ is much greater than expected on the basis of the few solution studies of fluorinated radicals in the literature², and it is doubtful if π -electron only spin density calculations will give meaningful spin distributions with these radicals.

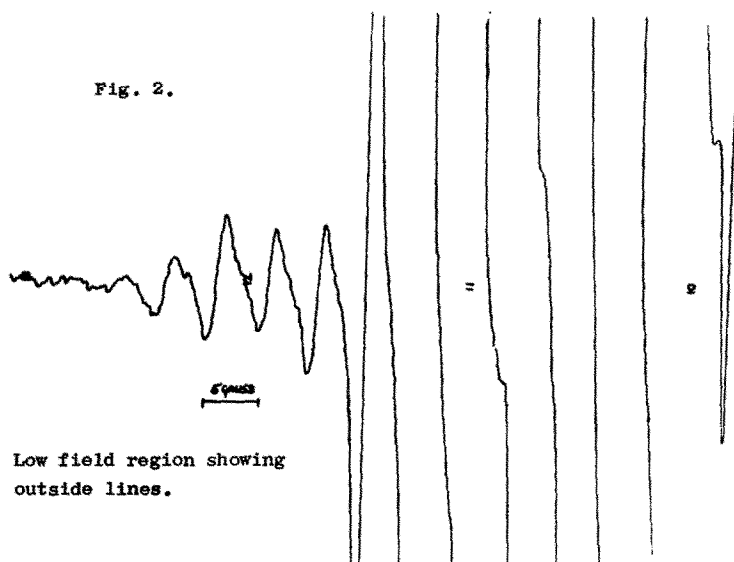
The E.S.R. spectra were obtained using a Decca X3 Spectrometer and an 11" Newport Instruments magnet. We thank S.R.C. for financial support, and Imperial Smelting Corporation for a gift of $C_{10}F_8$.

REFERENCES

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2. A. Hinchcliffe and J.N. Murrell, Mol. Phys., **14**, 147 (1968) and references therein.



E.S.R. spectrum of $[C_{10}F_8]^+$ in solution. Central portion of the spectrum.



Low field region showing
outside lines.