

Table

Chemical shift differences ($\delta\nu$), coalescence temperatures (t_c) and free energies of activation (ΔG^\ddagger) for the Ar-N rotation of I - III in CHF_2Cl at 60 MHz. In the case of III the following thermodynamic parameters of activation were also measured by total line shape analysis: $\Delta H^\ddagger = 11.80 \pm 0.9 \text{ kcal mol}^{-1}$, $E_a = 12.3 \pm 0.9 \text{ kcal mol}^{-1}$, $\Delta S^\ddagger = -3 \pm 4 \text{ cal mol}^{-1} \text{K}^{-1}$ and $\text{Log}A = 12.5 \pm 0.9$

Compound	$\delta\nu(\text{Hz.})$	$t_c(^{\circ}\text{C})$	$\Delta G^\ddagger (\text{kcal mol}^{-1})$
I	7.7 (at -131°)	-123.5	7.7 ± 0.1
II	9.9 (at -131°)	-122	7.7 ± 0.1
III	12.4 (at -80°)	-31.5	12.4 ± 0.1

References

1. Part 10 L.Lunazzi, G.Cerioni, E.Foresti and D.Macciantelli, J.Chem.Soc. (Perk.II) submitted.
2. J.Heidberg, J.A.Weil, G.A.Janusonis and J.K.Anderson, J.Chem.Phys., 1964, 41, 1033 and J. Jouanne and J.Heidberg, J.Am.Chem.Soc., 1973, 95, 487.
3. D.D.MacNicol, J.C.S.Chem.Comm., 1969, 933.
A.R.Katritzky and G.J.Tiddy, Org.Magn.Resonance, 1969, 1, 57.
4. I.C.Calder, P.J.Garratt and F.Sondmeier, J.C.S.Chem.Comm., 1967, 41.
5. D.D.MacNicol, ibidem., 1969, 1516.
6. S.Brownstein, E.C.Horswill and K.U.Ingold, Can.J.Chem., 1969, 47, 3243 and J.Am.Chem.Soc., 1970, 92, 7217.
7. T.Liliefors, Org.Magn.Resonance, 1974, 6, 144.
8. D.A.Kleier and G.Binsch, Program 140 (DNMR) Q.C.P.E. Indiana University, Bloomington.
9. T.Drakemberg, R.Jost and J.Sommer, J.C.S.Chem.Comm., 1974, 1011.
L.Lunazzi, D.Macciantelli, A.C.Boicelli, Tetrahedron Letters, 1975, 1205.
F.Bernardi, L.Lunazzi, P.Zanirato and G.Cerioni, Tetrahedron, 1977, 33, 1337.
L.Lunazzi, A.Dondoni, G.Barbaro and D.Macciantelli, Tetrahedron Letters, 1977, 1079.
C.H.Bushweller, W.G.Anderson, P.E.Stevenson and J.W.O'Neil, J.Amer.Chem.Soc., 1975, 97, 4338.
10. H.S.Gutowsky and C.H.Holm, J.Chem.Phys., 1956, 25, 1228.
11. M.Bosco, L.Forlani, P.Riccio and P.E.Todesco, J.Chem.Soc., (B), 1971, 1373.
G.Bartoli, O.Sciaccovelli, M.Bosco, L.Forlani and P.E.Todesco, J.Org.Chem., 1975, 40, 1275.

Thanks are due to the C. N. R. (Rome) for financial support.