

SOME REDOX REACTIONS OF XENON(II) AND CHLORINE SYSTEMS

M. J. Clegg and A. J. Downs

Inorganic Chemistry Laboratory, University of Oxford, South Parks Road
Oxford OX1 3QR (U.K.)

Solutions of $\text{XeF}^+\text{Sb}_2\text{F}_{11}^-$ in SbF_5 react at room temperature with Cl_2 or with chloride-containing species such as PCl_5 and SbCl_5 to give deep orange-brown solutions containing the cations Cl_3^+ , known previously as a low-temperature species [1], and the hitherto unreported XeCl^+ , which has a Raman vibrational frequency of 383cm^{-1} , very similar to that of ICl [2]. The Cl_3^+ ion has also been isolated as its $\text{Sb}_2\text{F}_{11}^-$ salt, a bright orange solid stable at room temperature, synthesised from Cl_2 , F_2 and SbF_5 . Intense blue-green colours observed in several reactions of these systems appear to be associated with chlorine in an intermediate oxidation state, possibly Cl_5^+ .

1 R.J.Gillespie and M.J.Morton, Inorg.Chem., 9, 811 (1970).

2 W.Holzer, W.F.Murphy and H.J.Bernstein, J.Chem.Phys., 52, 399 (1970).