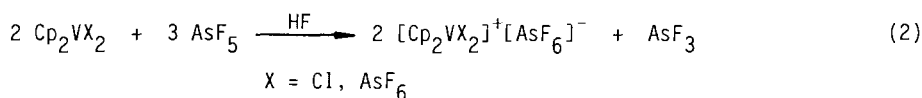
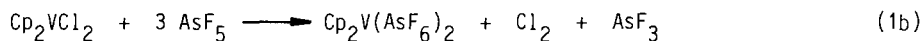
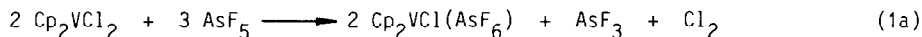


PREPARATION AND CHARACTERIZATION OF VANADOCEN(IV)
HEXAFLUOROARSENATE COMPLEXES AND THE HF CATALYZED
OXIDATION TO VANADOCENIUM(V) SPECIES

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Whereas in the Reaction of Cp_2VCl_2 ($\text{Cp} = \eta^5\text{-C}_5\text{H}_5$) with pure AsF_5 (eq. 1a,b) chloride is oxidized to yield Cl_2 , AsF_3 and $\text{Cp}_2\text{VCl}(\text{AsF}_6)$ traces of anhydrous HF facilitate the (thermodynamically favoured) oxidation of vanadium to give $[\text{Cp}_2\text{VCl}_2]^+[\text{AsF}_6]^-$ in 98% yield and AsF_3 (eq. 2). Similarly $\text{Cp}_2\text{V}(\text{AsF}_6)_2$ is oxidized by AsF_5 in the presence of HF to yield $[\text{Cp}_2\text{V}(\text{AsF}_6)_2]^+[\text{AsF}_6]^-$ and AsF_3 but $\text{Cp}_2\text{V}(\text{AsF}_6)_2$ does not react with pure AsF_5 in SO_2 at room temperature.



The structure of $\text{Cp}_2\text{V}(\text{SbF}_6)_2$ and $[\text{Cp}_2\text{VCl}_2]^+[\text{AsF}_6]^-$ has been determined by a X-ray diffraction study. The paramagnetic species $\text{Cp}_2\text{V}(\text{AsF}_6)_2$, $\text{Cp}_2\text{V}(\text{SbF}_6)_2$ and $\text{Cp}_2\text{VCl}(\text{AsF}_6)$ were characterized by e.p.r. spectroscopy on polycrystalline samples and in THF, CH_2Cl_2 and SO_2 solution.

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