

ELECTROCHEMICAL STUDIES OF COMPLEX FLUORIDES IN NON-AQUEOUS SOLVENTS

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Electrochemical studies on hydrolytically unstable complex fluorides have been shown to be possible in highly purified acetonitrile. The techniques of study will be described briefly. A survey of the results obtained to date will be given.

MoF_6 is a stronger oxidising agent than WF_6 by 1.06 volts. Neither $|\text{MoF}_6|^-$ nor $|\text{WF}_6|^-$ can be reduced below $|\text{MF}_6|^-$ in acetonitrile. $|\text{UF}_6|^-$ can be reduced to the transient species $|\text{UF}_6|^{2-}$ which is unstable in solution. $|\text{OsF}_6|^-$ undergoes successive reduction to $|\text{OsF}_6|^{2-}$ and $|\text{OsF}_6|^{3-}$.

$|\text{MF}_6\text{L}|^-$ undergoes complex electrochemical behaviour involving reduction to $|\text{MF}_6\text{L}|^{2-}$ with subsequent dissociation to $|\text{MF}_6|^-$ and L^- . Reoxidation is in the presence of L^- and hence none of the redox steps are fully reversible. The relation between the electrode potentials and the ligand L will be discussed.

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