Keywords:
Rhenium, organometalic, cyclic voltammetry

Rhenium Electrochemistry

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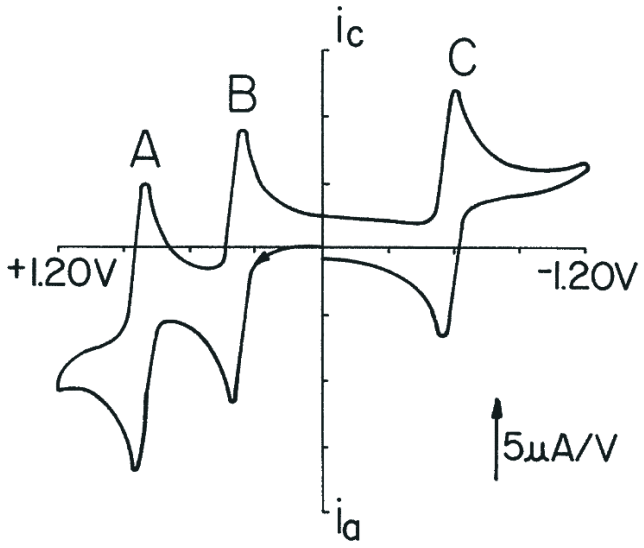
Sample: $[Re(CNp\text{-}Tolyl)_6]^+$ $[Re(CNp\text{-}Tolyl)_2Cl_4]^-$
Concentration: 0.56mM (7.8mg/9mL)
Electrolyte: 0.2M (n-butyl)$_4N^+PF_6^-$ in CH_2Cl_2
CV Scan Rate: 200 mV/sec
Temp: 9 °C
Working Electrode: Platinum
Reference Electrode: SCE

This Cyclic Voltammogram (CV) illustrates the use of CV for the identification of a new organometallic species. From earlier work, the CV of the compound $Re(CNp\text{-}Tolyl)_6PF_6$, the redox couple labeled 'A' was identified. The anion, however, was unknown. This quick experiment using only 7.8 mg of sample enabled us to conclude this to be a Rhenium (III) species.

(Charlie Cameron and RA Walton, Purdue University)



A $[Re(CNp\text{-}Tolyl)_6]^+ \rightleftharpoons [Re(CNp\text{-}Tolyl)_6]^{2+}$
Re(I) Re(II)
+1.05V

B $[Re(CNp\text{-}Tolyl)_2Cl_4]^- \rightleftharpoons [Re(CNp\text{-}Tolyl)_2Cl_4]$
Re(III) Re(IV)
+0.49V

C $[Re(CNp\text{-}Tolyl)_2Cl_4]^{2-} \rightleftharpoons [Re(CNp\text{-}Tolyl)_2Cl_4]^-$
Re(II) Re(III)
-0.75V

CNp-Tolyl = p-Tolylisocyanide

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