

## Preparation of new cationic complexes $[(\eta^5\text{-C}_5\text{H}_5)\text{Fe}(\text{dppe})\text{L}]\text{PF}_6$ with sulphur and other donor ligands

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The reaction of  $(\eta^5\text{-C}_5\text{H}_5)\text{Fe}(\text{dppe})\text{I}$  with the ligand  $\text{L}^?$  ( $\text{L}^? = \text{S}_2(\text{CH}_3)_2$ ,  $\text{C}_6\text{H}_5\text{SNR}_2$  ( $\text{R} = \text{CH}_3$ ,  $\text{C}_6\text{H}_{11}$ ),  $\text{S}(\text{NC}_4\text{H}_8\text{O})_2$ ,  $\text{P}(\text{n-Bu})_3$ , tetrahydrofuran and  $\text{NC}_5\text{H}_5$  in the presence of  $\text{TlPF}_6$  have been investigated. Formation of the new cationic complexes  $[(\eta^5\text{-C}_5\text{H}_5)\text{Fe}(\text{dppe})\text{L}^?]\text{PF}_6$  was found for all the ligands except for  $\text{N,N}^?$ -thiobis-morpholine which was not coordinated. The THF complex  $[(\eta^5\text{-C}_5\text{H}_5)\text{Fe}(\text{dppe})(\text{THF})]\text{PF}_6$  appears to be a useful precursor for the preparation of other cationic complexes. Electrochemical one electron oxidation of some of the cationic complexes suggests the formation of stable dicationic  $17e^-$ -species.  $^1\text{H-NMR}$  and  $^{31}\text{P-NMR}$  data of the fragment  $(\eta^5\text{-C}_5\text{H}_5)\text{Fe}(\text{dppe})^+$  correlate with the  $\pi$ -acceptor capacity of the  $\text{L}^?$  ligand. © 1994.