

Synthesis, Electronic Spectra and Solvent-Induced Reversible Dissociation of Diphosphine(hexafluoroacetylacetonato)copper(I) Complexes

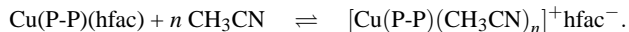
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The complexes $\text{Cu}^{\text{I}}(\text{P-P})(\text{hfac})$ with P-P = 1,2-bis(diphenylphosphino)ethane (diphos), 1,3-bis(diphenylphosphino)propane (prophos), 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl (binap) and hfac = hexafluoroacetylacetonate were synthesized and spectroscopically characterized. In the solid state or in solutions of non-polar solvents these compounds are yellow owing to a long-wavelength ($\text{hfac}^- \rightarrow \text{P-P}$) ligand-to-ligand charge transfer absorption. In coordinating solvents such as CH_3CN the complexes undergo a reversible dissociation according to the equation:



While the complexes are not luminescent the ion pairs $[\text{Cu}(\text{P-P})(\text{CH}_3\text{CN})_n]^+ \text{hfac}^-$ are emissive at 77 K. The cations and the anions show separate emissions as indicated by the excitation spectra.

Key words: Electronic Spectra, Luminescence, Copper Complexes, β -Diketonate Complexes