Synthesis and Characterization of Diarylthiourea Derivatives of Tungsten Carbonyl

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Reactions of five *sym*-diarylthioureas (L), *viz*,, *sym*-diphenylthiourea (dptu), *sym*-di-*o*-tolylthiourea (dottu), *sym*-di-*p*-tolylthiourea (dpttu), *sym*-di-*o*-anisylthiourea (doatu) and *sym*-di-α-naphthylthiourea (dαntu) with $W(CO)_6$ have been performed both by reflux and ultra-violet irradiation methods in which only monosubstituted products $[(L)W(CO)_5]$ are obtained. Several mixed ligand tungsten carbonyl derivatives, *viz.*, [(*o*-phen or 2,2'-bipy)$(L)W(CO)_3$] and [(Ph_3P or Ph_3As)$(L)W(CO)_4$] have also been synthesized. Halogenation of $[(L)W(CO)_5]$ yielded *heptacoordinated* $[(L)W(CO)_4X_2]$ (X = Br or I). The complexes have been characterized by microanalytical data, conductivity and IR measurements. The C-O stretching force constants and CO-CO stretch-stretch interaction constants of $[(L)W(CO)_5]$ derivatives have also been evaluated from the IR spectra.

Key words: Tungsten Carbonyl, Diarylthiourea Ligands, C-O Force Constants