PHOTOPHYSICS OF PADDLEWHEEL COMPLEXES INVOLVING MOLYBDENUM OR TUNGSTEN QUADRUPLE BONDS SUPPORTED BY AMIDINATE AND CARBOXYLATE LIGANDS

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Spectroscopic studies of the trans-substituted compounds $M_2(O_2CCH_3)_2[(N^iPr)_2CR]_2$, where M = Mo or W and R = CCPh have been carried out. These complexes have been shown to possess optically active excited states in both the singlet and triplet manifolds that can be classified as either charge transfer or metal centered in character. The nature of the excited states has been assigned based on steady state absorbance and emission studies and supported by electronic structure calculations. Furthermore, excited state dynamics have been determined from both ns- and fs-transient absorption spectroscopies.