FEMTOSECOND TIME-RESOLVED INFRARED SPECTRA OF ORGANOMETALLIC COMPLEXES BOUND TO A DINUCLEAR METAL CENTER

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Compounds of the form $M_2L_2L'_2$, where M_2 is a quadruply bonded metal center (M = Mo or W) and L and L' are conjugated organic ligands, are known to show interesting photophysical properties and exhibit intense metal-to-ligand charge transfer (MLCT) transitions throughout the visible spectrum. Recently, we have modified one of the ligands to incorporate a transition metal carbonyl complex bound to an organic moiety. Following excitation into the MLCT band, the vibrational modes of the organometallic ligand can be observed by fs time-resolved infrared (TRIR) spectroscopy. This allows for a visualization of where the electron density resides in the excited states, which provides useful information for designing new materials that could later be incorporated into solar devices.