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The effect of aryl substituted triamidoamine ligands on the structure of dioxo-molybdenum (VI) complexes

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Molybdenum is a known transition metal recognized for its crucial role as an active center for oxygen transfer in enzymes and has also been known to split dinitrogen. Experiments conducted during the internship period included the use of stabilizing multidentate ligands synthesized from tris aminoethyl amine (TREN) with aromatic aldehydes including binaphthalene, benzene, and pyridine with synthesized molybdenum (VI) complexes $\text{MoO}_2\text{Cl}_2(\text{Me}_3\text{PO})_2$, $\text{MoO}_2\text{Cl}_2(\text{MePh}_2\text{PO})_2$, and $\text{MoO}_2\text{Cl}_2(\text{Ph}_3\text{PO})_2$. Preliminary findings at the conclusion of the summer research phase indicate that pyridine-based TREN ligands are readily sterically adaptable to the octahedral molybdenum (VI) geometry and produce viable TREN ligand-molybdenum (VI) complexes for analysis by cyclic voltammetry. Future experimentation will seek to further knowledge of energy changes and interactions within the 5d orbitals during the formation of the TREN ligand-molybdenum complex, as well as redox chemistry of high oxidative oxomolybdenum derivatives to fully comprehend the role of this metal in relation to oxygen transfer.