

ELECTRONIC AND SPECTROSCOPIC PROPERTIES OF A REDOX ACTIVE ANALOG OF 4,4'-BIPYRIDINE INCORPORATING A METAL-METAL QUADRUPLE BOND

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The synthesis of the metal-metal quadruple bond containing complex, $(MM)(TiPB)_2(nic)_2$, where M= Mo or W, TiPB= Triisopropylbenzoate, and nic= isonicotinate, is reported. This is envisioned as an inorganic analog of 4,4'-bipyridine, which is used to bridge two tris(pentafluoro phenyl)borane units. The electronic and spectroscopic properties of both the parent compounds and the borane adducts are discussed. For both the molybdenum and tungsten complexes, addition of the borane significantly stabilizes the HOMO and, to a larger extent, the LUMO of the complexes. This results in a redshift in the metal to ligand charge transfer band for the neutral complexes and stabilizes the -1, mixed valence, state of the complexes.