

Photoactive Heterodinuclear Complexes for Hydrogen Production or CO-Release

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The synthesis of a photoactive organometallic molecule made of a photosensitizer, Ruthenium tris (bipyridine), and potential ligands for Cobalt and Rhenium was investigated. The complex molecule could be a precursor for heterodinuclear complexes formed by Ruthenium tris (bipyridine) and either heptacoordinated Cobalt II complex or Rhenium II carbonyl complex, respectively for reduction of protons into hydrogen and carbon monoxide release. The interest of the system comes from the bonding of the photosensitizer to Cobalt II catalyst or Rhenium II CO-releasing molecule. The supramolecular system formed with Cobalt II improves the electron transfer by not being limited by diffusion through the solvent. The proximity of the two reactants, Rhenium II carbonyl complex and singlet oxygen, increases the yield of CO dissociation by preventing the singlet oxygen to react with other molecules.

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