

Influence of the 4-substituted pyridine ligand L[±] on both the conformation and spectroscopic properties of the (2,2'-biquinoline-[±]N1,[±]N1')

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A series of new rhenium(I) complexes of the type [ReI(CO)₃(L)(L[±])]ⁿ⁺ (L = 2,2'-biquinoline (bqui) or 3,3'-(ethane-1,2-diyl)-2,2'-biquinoline (CH₂CN₂)bqui); L[±] = CF₃SO₃⁻, pyridine (py), or 4-substituted pyridine (HOPy, Bzpy, or NCpy); n = 0 or 1) were prepared and characterized by FT-IR, ¹H-NMR, UV/VIS and emission spectroscopy, luminescence lifetimes, and cyclic voltammetry. The pseudo-octahedral facial configuration was established by X-ray single-crystal diffraction analysis of two complexes and by a FT-IR study of all complexes. The [Re(CO)₃(bqui)(Bzpy)](CF₃SO₃) complex crystallizes in the form of two mirror isomers arising from the conformational mobility of the biquinoline ligand. A correlation between the metal-to-ligand charge-transfer (MLCT) emission maxima and the ρ^+ Hammett parameter was established for the complexes of the bqui series, while such correlation was not observed for the complexes of the (CH₂CH₂)bqui series. No correlation between oxidation potentials and the