

【1】 Bridge Mediated Intramolecular Electronic Coupling. Newer Facets

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【Abstract】

The fundamental aspect of bridge mediated intramolecular electronic coupling in transition metal complexes has been the primary focus of the present deliberation. Recent developments have facilitated to extend the scope of mixed-valent ruthenium complexes beyond conventional systems by using sophisticated ligands and by creating more variegated coordination patterns. The emergence of fascinating molecular frameworks with non-innocent ligands (bridge or terminal) has raised the danger of mistaking radical complexes for mixed-valent intermediates. The experimental (EPR!) and theoretical methodologies to differentiate between these cases will also be addressed.

【 2 】 Electronic Structures of Non-innocent Assemblies. An Experimental and Theoretical Approach

The comparable energy of frontier orbitals of metal ions and redox-active ligands extends variable electronic situation at the metal-ligand interface which indeed makes the process of establishing the tangible electronic structures of transition metal derived redox non-innocent assemblies rather challenging. The delicate intramolecular charge, spin and electron transfer phenomena in such multi component assembly often yield highly inconsistent valence and spin-configurations including considerable ligand-metal orbital mixing (covalency) leading to even unconventional intermediate descriptions. The present report is therefore intended to demonstrate the fact or fiction around the aforesaid issues using selective molecular frameworks.