

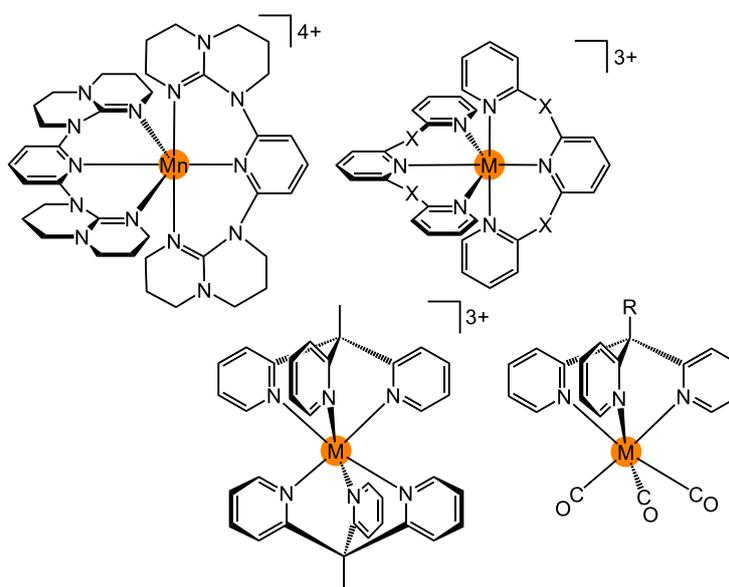


Photoactive Complexes with Earth-abundant Metals

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A sustainable future requires reducing reliance on precious metals in addition to avoiding complex ligand architectures in transition metal complexes. I will discuss recent developments and future directions of research on photoactive coordination compounds made from non-precious transition metal elements instead of conventionally used noble metals. I will focus on well-characterized complexes made from vanadium, chromium, manganese and molybdenum using simple and easy-to-make ligand environments.



The nature of the excited states comprise spin-flip, ligand-to-metal and metal-to-ligand charge transfer states. The excited state lifetimes range from sub-picoseconds to milliseconds in solution. Emerging applications cover near-IR luminescence beyond 1000 nm, photochemistry/photocatalysis and triplet-triplet annihilation upconversion.

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