“Non-Innocent Ligands in Transition Metal and Lanthanide Coordination Chemistry”

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Abstract: Metal complexes containing redox-active, non-innocent ligands remain of significant interest across multiple research fields, including bioinorganic chemistry, catalysis, and molecular magnetism. Specifically, in molecular magnetism, employing radical-bridged complexes of 3d and 4f metals as potential high-spin systems and single-molecule magnets (SMMs) has proven highly effective. This effectiveness stems primarily from the strong direct magnetic exchange interactions arising from orbital overlap between metal centers and radical bridging ligands, significantly surpassing the indirect superexchange mediated through diamagnetic bridging groups.
In this work, we describe the synthesis and detailed magnetic characterization of a series of radical-bridged metal complexes. The fitting of magnetic measurements for all synthesized compounds consistently revealed strong magnetic exchange coupling constants.