

Lanthanide-Based Single-Molecule Magnets with High Blocking Temperatures

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Molecules that possess an energy barrier to spin inversion have intriguing potential applications in areas such as magnetic refrigeration, molecular spintronics and high-density information storage. Owing to their large magnetic moments and magnetic anisotropy as a result of the near degeneracy of the strongly spin-orbit coupled 4f orbitals, lanthanides have been demonstrated to be well-suited for the design of single-molecule magnets. In fact, lanthanide complexes have continued to exhibit the highest relaxation barriers and blocking temperatures where the latter stems from strong magnetic exchange. A multitude of radical-bridged dilanthanide complexes comprising N-heterocyclic ligands were explored via SQUID ac and dc magnetic susceptibility measurements. These results, in conjunction with other work, will be presented.