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Enriching single-ion magnetism: Importance of symmetry

The current frenzy in the field of SMMs is driven by better understanding of the effects of crystal field (CF) and molecular symmetry on the magnetic properties, especially in the case of mononuclear paramagnetic complexes, apart from other controlling factors. This has led to the advent of highly anisotropic single-ion magnets (SIMs) with magnetic blocking temperatures and anisotropic energy barriers. This talk would summarize our recent research in the light of the emergence of the importance of CF and symmetry in 4f ion based single-ion magnets (SIMs), especially in the context of SIMs with D5h symmetry, apart from commenting on the synthetic efforts adopted to place these metal ions in unusual coordination geometries.

Keywords: molecular magnets, crystal field, axiality, lanthanide complexes, ambient stability, high blocking temperature

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