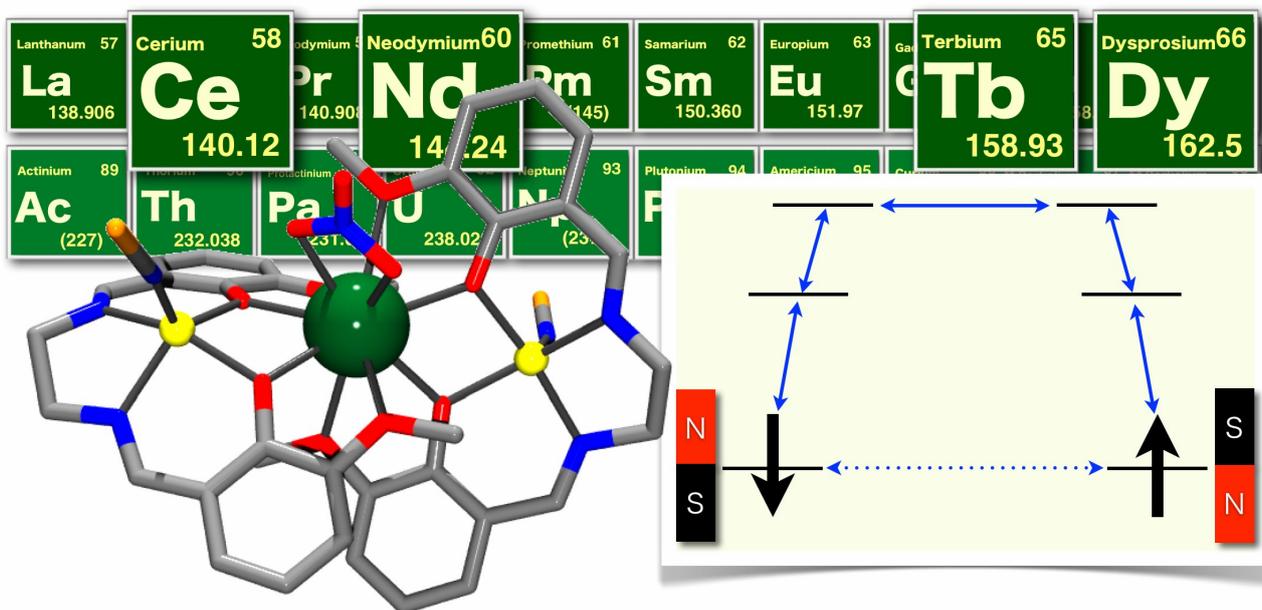


Syntheses and magnetic properties of Ln(III) based single molecule magnets.

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The lanthanide-based single-molecules magnets were synthesized involving Ce(III), Nd(III), Tb(III), or Dy(III) as spin-carriers, on the basis of the molecular designing.

Paramagnetic molecules are magnetized when placed in a magnetic field, and this magnetization is quickly lost when the field is turned off. However, in some cases, the molecules maintain their magnetization temporarily, and they are regarded as single-molecule magnets (SMMs). The slow magnetic relaxation phenomena of SMMs are originated from the combination of a large magnetic moment and an easy-axis magnetic anisotropy, and lanthanide(III) ions are good candidates for the construction of better SMMs. We have demonstrated the designing of anisotropic crystal field around lanthanide(III) ion such as Tb(III) and Dy(III), and revealed the detail of magnetic properties of the SMMs. We have firstly synthesized the SMMs including light lanthanide(III) ions such as Ce(III) and Nd(III), on the basis of the fine designing of the molecular structure.

Keywords : Lanthanide(III) complexes, X-ray structure, solid state properties, molecular-based magnetism, single molecule magnets