

## Hybrid lanthanide complexes for nanomagnets

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The plasticity of the coordination chemistry of Lanthanide ions (Ln) has allowed the design of novel coordination compounds with slow relaxation of the magnetization since the first Single Ion Magnet (SIMs) was reported by Ishikawa, who used the phthalocyaninate ( $Pc^{2-}$ ) ligand to make a “sandwich type” complex. The coordination chemistry has allowed the possibility to design different types of molecular complexes with SIMs behaviour based on organic ligands. There is also Ln-SIMs based on inorganic ligands, using different types of lacunary polyoxometalates (LPOM) like,  $[XW_{11}O_{39}]^{n-}$ . The combination of both types of ligands can produce hybrid inorganic-organic Ln complexes with SIM behaviour. This is an attractive approach since these hybrid materials could benefit from the combination of the ease of functionalization of the organic ligands with the robustness of the inorganic moieties. There are reports that a hybrid mononuclear DyIII complex could improve the relaxation dynamics when it is compared to the inorganic analogues [1]. Thus, in this work we present the recent results and advances on these systems, also analysing how changes in the geometry of the metal centres are affected by the nature of the type of ligand (organic, inorganic or hybrid) [2]. Moreover, we will discuss which of these changes has an effect on the magnetic properties of the lanthanide complexes.

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### References

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