Multidentate ligands as a tool in syntheses of complexes with slow magnetic relaxation

Juraj Černák

P. J. Šafárik University in Košice, Institute of Chemistry, Department of Inorganic Chemistry, Moyzesova 11, SK-040 01 Košice, Slovakia

We are living in the era of information society so there is a strong demand on storage of information [1]. As perspective materials for molecule-based information storage are considered Single Molecule Magnets (SMM), materials which can exist in two magnetic states [2,3]. Consequently, at present, the magnetic properties including SMM magnetism of various complexes are intensively studied [4,5]. SMMs from chemical point of view (composition, crystal structure) can be very variable and among these the lanthanide complexes with prevailing O-donor ligands are especially popular. One way leading to complexes exhibiting slow magnetic relaxation is the use of multidentate ligands, e.g. based on polycarboxylato ligands as purely O-donor or Schiff base type ligands as O,N-donors. Within the lecture will be given several examples of the use of the above-mentioned ligands for syntheses, characterizations, and crystal structures of (mainly) lanthanide complexes as magnetic materials.

This work was supported by grants VEGA 1/0189/22 and APVV-18-0016.

[1] M. Gams, T. Kolenik, Electronics 2021, 10, 514.

[2] Y.-S. Meng, S.-D. Jiang, B.-W. Wang, S. Gao, Acc. Chem. Res. 2016, 49, 2381–2389.

[3] D. Gatteschi, A. Cornia, M. Mannini, R. Sessoli, Inorg. Chem. 2009, 48, 3408-3419.

[4] C. Rajnák, J. Titiš, J. Moncoľ, R. Mičová, R. Boča, Inorg. Chem. 2019, 58, 991-994.

[5] M. Orts-Arroyo, A. Sanchis-Perucho, N. Moliner, I. Castro, F. Lloret, J. Martinez-Lillo, Inorganics 2022, 10, 32.