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Luminescent single molecule magnet in a series of lanthanides-TTF complexes

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Lanthanide ions are well-known to exhibit large magnetic moments and strong magnetic anisotropy and therefore they are considered as good candidates for the elaboration of Single Molecule Magnets (SMMs). Complexation of these particular metal ions by redox active ligands derived from TTFs led to electroactive SMM with antennae effect of the ligands as well as very good correlation between magnetism and luminescence at the molecular scale. In this lecture several compounds exemplifying these features will be reported.

Among them, dinuclear complexes of lanthanides associating both 4, 5-Bis(thiomethyl) -4'-carboxylictetrathiafulvalene and 4, 5-Bis(thiomethyl) -4'-ortho-pyridyl -N-oxide -carbamoytetrathiafulvalene ligands have been elaborated. Dc magnetic susceptibility measurements highlight ferromagnetic interactions between the metallic centres. The two Dy(III) and Yb(III)-based analogues display SMM behaviour. Experimental and theoretical magnetic and photo-physical investigations have confirmed that a multi-electroactive luminescent SMM is obtained in the case of the Yb(III) analogue.

The first Dy(III)/TTF complex which exhibit a memory effect both in solid state and in solution will be also presented.

Biography

Lahcene Ouahab obtained his Third Cycle thesis in 1977 and his State Doctorate in 1985 in Rennes1 University. He joined the CNRS as Researcher in 1989 and was promoted as Director of Research in 1998. He is the author of 260 publications, 3 books, 140 invited lectures (21 plenaries) in international conferences and academic institutions. He organized many scientific meetings. He is the chair of the ICCC 2016 in France. He is also the member of the European Academy of Science, 2012 Grand Prix Pierre Süe of the SCF, and the 2011 Claude Berthault Prize. His research is dealing with (multi-) functional molecular materials.

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