Muralee Murugesu

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Professional Career

2015.05 – present	Full Professor and University Research Chair in Nanotechnology, University of Ottawa
2011.04 – 2015.03	Associate Professor, University of Ottawa
2011.04 – 2006.07	Assistant Professor, University of Ottawa

Education

1999 – 2002 Ph.D.	Karlsruhe Institute of Technology, Germany
1997 – 1999 M.Sc.	University of East Anglia, UK
1994 – 1997 B.Sc.	University of Paris 7, France

Awards and Recognitions

JSPS Fellowship Award (2018); NSERC DG Accelerator Award (2018); NSERC DG-DND Award (2018); MINCyT – Argentina Visiting Professorship, Argentina (2018); AMADEus Visiting Professorship, CRPP-CNRS Bordeaux, France (2017); Elected member of the prestigious RSC "*The College of New Scholars, Artists and Scientists*" (2016); Visiting Professor, UNICAMP Campinas, Brazil (2016); CSC Strem Chemicals Award for Pure or Applied Inorganic Chemistry (2015); University Research Chair Award-University of Ottawa (2015); Young Researcher Award-University of Ottawa (2013); Early Researcher Award-Ontario (2013).

Selected Publications

1. "*In the Pursuit of Record Breaking Energy Barriers: A Study of Magnetic Axiality in Diamide Ligated Dy^{III} Single-Molecule Magnets*" Harriman, K. L.; Brosmer, J. L.; Ungur, L.;* Diaconescu, P. L.;* Murugesu, M.* *J. Am. Chem. Soc*., **2017**, *139*, 1420-1423..
2. "*The stepwise crystallographic visualization of dynamic guest binding in a nanoporous framework*" Brunet, G.; *Safin, D. A*.; Aghaji, M. Z.; Korobkov, I.; Woo, T. K.;* Murugesu, M.* *Chem. Sci.,* **2017***, 8*, 3171-3177.
3. *"Cycloheptatrienyl trianion: An elusive bridge in the search of exchange coupled dinuclear organolanthanide single-molecule magnets"* Harriman, K. L.; Le Roy, J. J.; Ungur, L.; Holmberg, R. J.; Korobkov, I.; Murugesu, M.* *Chem. Sci*., **2017**, 8, 231-240.
4. "*Coupling Strategies to Enhance Single-Molecule Magnet Properties of Erbium-Cyclooctatetraenyl Complexes*" Le Roy, J. J.; Ungur, L.; Korobkov, I.; Chibotaru, L. F.; Murugesu, M.* *J. Am. Chem. Soc*., **2014**, *136*, 8003-8010.
5. "*Fine-tuning the Local Symmetry to Attain Record Blocking Temperature and Magnetic Remanence in a Single-Ion Magnet*", Ungur, L.; Le Roy, J. J.; Korobkov, I.; Murugesu. M.;* Chibotaru, L. F.* *Angew. Chem. Int. Ed*., **2014**, *53*, 4413-4417
6. "*Ligand Field Influence on Slow Magnetisation Relaxation versus Spin-Crossover in Mononuclear Cobalt Complexes*" Habib, F.; Luca, O, R.; Vieru, V.; Shiddiq, M.; Gorelsky, S. I.; Takase, M. K.; Chibotaru, L. F.; Hill, S.; Crabtree, R. H.; Murugesu, M.* *Angew. Chem. Int. Ed*., **2013**, *52*, 11290-11293.
7. "*An Organolanthanide Building Block Approach to Single-Molecule Magnets*" Harriman, K. L.; Murugesu, M.* *Acc. Chem. Res*., **2016***, 49,* 1158–1167
8. "*A Dinuclear Cobalt Complex Featuring Unprecedented Anodic and Cathodic Redox Switches for Single-Molecule Magnet Activity*" Fortier, S.; Le Roy, J. J.; Chen, C.-H.; Vieru, V.; Murugesu, M.;*

Chibotaru, L. F.;* Mindiola, D. J.;* Caulton, K. G.* *J. Am. Chem. Soc.,* **2013,** *135*, 14670–14678.

Nanoporous materials and nanomagnets with tailor-made properties

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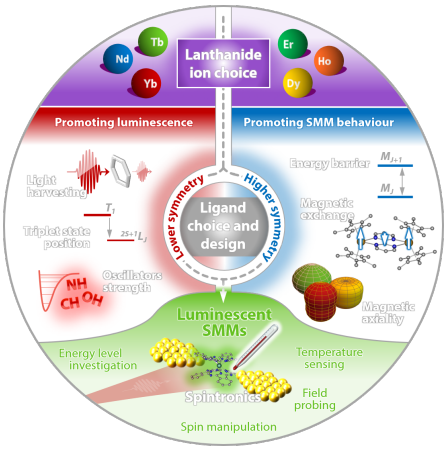
Abstract

Multimetallic rare-earth systems and especially Dy^{III}, Er^{III}-based materials have sparked much interest in the area of molecular magnetism due to the large intrinsic magnetic anisotropy of the lanthanide ions. When such a unique property is combined with a high-spin ground state (*S*) in a molecular complex, it causes slow relaxation of the magnetization as seen for Single-Molecule Magnets (SMMs). Lanthanide only SMMs are rare due to the difficulty in promoting the magnetic interactions *via* the overlapping bridging ligand orbitals with the contracted 4*f* orbital of the ions. Toward the goal of inducing significant magnetic interaction between lanthanide ions and subsequently isolating high-energy barrier SMMs, our research is currently focused on the use of phenoxide bridges as superexchange pathways between spin carriers.[1-4] In addition, radical bridged complexes provides an alternative approach for inducing significant interactions between the spin carriers.[5] Such approach could ultimately allow efficient coupling of 4*f* ions and yield SMMs with record breaking blocking temperatures. The second part of talk will be focused on Metal-Organic Frameworks. More specifically, on the stepwise crystallographic visualization of dynamic guest binding in a nanoporous framework.[6-7]



References

1. Lin, P.-H.; Clerac, R.;* Murugesu, M.* and co-workers, *Angew. Chem. Int. Ed.*, **2008**, *47*, 8848. **2**. Lin, P.-H.; Murugesu, M.* and co-workers, *Angew. Chem. Int. Ed*., **2009**, *48*, 9489. **3**. Long, J.; Murugesu, M.* and co-workers, *J. Am. Chem. Soc*., **2011**, *133*, 5319. **4**. Habib, F.; Murugesu, M.* and co-workers, *J. Am. Chem. Soc*., **2011**, *133*, 8830 **5**. Lemes, M. A.; Brunet, G.; Pialat, A.; Ungur, L.; Korobkov, I.; Murugesu, M.* *Chem. Commun.* **2017***, 53,* 8660-8663. **6**. Brunet, G.; Murugesu, M.* and co-workers, *Chem. Sci*., **2017**, *8*, 3171-3177. **7**. Brunet, G.; Murugesu, M.* and co-workers *ACS Appl. Mater. Interfaces*, **2019**, *11*, 3181-3188.