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INTRODUCTION

Introduction to the themed issue in honour of Prof. Jack Harrowfield and Dr. Jacques Vicens

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Prof. Jack Harrowfield was born in the small town of Donald, in south-eastern Australia in 1944. After completion of both his undergraduate and postgraduate studies at the University of Melbourne (PhD 1969 under the supervision of Prof. Warren Fee), he held postdoctoral fellowships at University College, London, the University of Toronto and the Australian National University (Canberra), working with Prof. Brice Bosnich (London, Toronto) and Prof. Alan Sargeson (Canberra). His first academic position was at the new institution of Murdoch University in Perth, Western Australia and was followed by the major part of his career at the University of Western Australia, also in Perth. In 2004, he joined the CNRS as a Research Director in the laboratory of Prof. Jean-Marie Lehn in Strasbourg. As an Australian, his interests are typically in the area of metal-ion coordination chemistry, encompassing kinetics, thermodynamics and the synthesis of both ligands and complexes. He regards the problem of understanding selectivity in interactions between chemical species as of continuing fundamental importance. He has shared a major research interest with Dr. Jacques Vicens in the chemistry of calixarenes, and the bulk of his publications can be said to concern four areas, all concerning coordination chemistry in its most general sense:

1. The synthesis and coordination chemistry of polyamines, especially macrocyclic and macrobicyclic, "cage" species.
2. Reactions of coordinated ligands and the exploitation of these reactions in synthesis.
3. Coordination chemistry of the calixarenes, especially concerning rare earth complexes.
4. Structural chemistry as it relates to understanding the nature of labile interactions. Though certainly not a structural chemist, he has benefitted enormously from a long-term collaboration in this area with Prof. Allan White, a collaboration so prolific that no doubt he has given a convincing impression of really being a structural chemist!

Some selected publications

"A Regional Rule for the Optical Activity of Conformational Isomers of Octahedral Transition Metal Complexes", B. Bosnich and J.M. Harrowfield, *J. Am. Chem. Soc.*, 1972, **94**, 3425–3438.

"Metal Ion Encapsulation: Cobalt Cages derived from Polyamines, Formaldehyde and Nitromethane", R.J. Geue, T.W. Hambley, J.M. Harrowfield, A.M. Sargeson and M.R. Snow, *J. Am. Chem. Soc.*, 1984, **106**, 5478–5488.

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"Spontaneous Assembly of Double-Stranded Helicates from Oligobipyridine Ligands and Copper(I) Cations. Structure of an Inorganic Double Helix", J.-M. Lehn, A. Rigault, J. Siegel, J.M. Harrowfield, B. Chevrier and D. Moras, *Proc. Nat. Acad. Sci. USA*, 1987, **84**, 2565–2569.

"Inter- and Intra-molecular Pathways in Polyamine Synthesis from Diamines", M.-H. Choi, J.M. Harrowfield, B.J. Kim, I.-C. Kim, S.-H. Kim, Y. Kim, M.-K. Lee, M. Mocerino, E. Rukmini, B·W. Skelton and A.H. White, *J. Chem. Soc., Dalton Trans*, 2001, 707–722.

J.M. Harrowfield in "The Lanthanides and Their Interrelations with Biosystems", Vol. 40, Chap. 4 of Met. Ions Biol. Syst., A. Sigel and H. Sigel, eds., M. Dekker, New York, 2003.

"Factors Influencing Solvent Adduct Formation by Calixarenes in the Solid State", Z. Asfari, A. Bilyk, C. Bond, J.M. Harrowfield, G.A. Koutsantonis. N. Lengkeek, M. Mocerino. B·W. Skelton, A.N. Sobolev, S. Strano, J. Vicens and A.H. White, *Org. Biomol. Chem.*, 2004, **2**, 387–396.

"Subnanometer-Resolved Patterning of Bicomponent Self-assembled Monolayers on Au(111)", G. Pace, A. Petitjean, M.-N. Lalloz-Vogel, J.M. Harrowfield, J.-M. Lehn and P. Samori, *Angew. Chem. Int. Ed.* 2008, **47**, 2484–2488.

Dr. Jacques Vicens was born in Marseille, La Porte de l'Orient, France in 1945. He studied chemistry at the Université Louis Pasteur de Strasbourg in France and obtained his PhD under the supervision of Prof. Jean-François Biellman (1977). He took an initial post-doctoral position in Namur, Belgium with Prof. Alain Krief (1978–1979). After a second post doctoral position in Rehovot, Israel with Prof. Leslie Leiserowitz and Prof. Meir Lahav (1980–1981), he moved to Lyon, France to enter the CNRS. In 1988, he came back to Strasbourg, where he is now a CNRS Director of Research. His scientific interests are in supramolecular chemistry mainly based on calixarene structures. His interest stems in the selective binding of a particular guest species for fundamental knowledge and commercial applications such as potential prototypes of new extraction agents and new molecular chemosensors based on luminescence thanks to a strong collaboration with Prof. Jong Seung Kim (Korea University, Seoul, Korea). In spite of an early and major research interest with Jack Harrowfied in coordination chemistry, he remained a convinced 'strasbourgian supramolecular chemist'. His major achievements are:

1. The use of calixarenes derivatives in the treatment of nuclear wastes, particularly to selectively complex and transport radioactive cesium for depository or transmutation. Industrial processes based on the calixarenes are working at the CEA in France and at ONRL in the USA.
2. The shuttling of metallic cations in tubular structures.
3. The evidence of the unknown trigonal form of uranyl ion.
4. The synthesis of calixdendrimers.
5. The synthesis of fluorescent sensors.
6. The design of molecular gyroscopes.

He has acted several times as an editor of four books and three special issues. He serves on the editorial board of The Journal of Inclusion Phenomena and Macrocyclic Chemistry (Associate Editor since 1999, Associate and Review Editor since 2004). He has served on the Springer editorial board since 2009.

Some selected publications

"Applied and Fundamental Research: Their Mutual Stimulation in the Real World of Chemistry Developing Calix*bis*crowns for Nuclear Waste Treatment", J. Vicens, *J. Incl. Phenom. Macrocyc. Chem.,* 2006, **55**, 193–196.

"1,3- Alternate Calix Tubes", B. Pulpoka, L. Baklouti, J.S. Kim, J. Vicens, In Calixarenes in the Nanoworld, J. Vicens and J.M. Harrowfield, eds., Springer, Dordrecht, Holland, 2007.

"An unprecedented trigonal coordination geometry for uranyl ion in its complex with *p-tert*-butylhexahomotrioxacalix[3]arene", P. Thuéry, M. Nierlich, B. Masci, J. Vicens, *J. Chem. Soc. Dalton Trans,* 1999, 3151–3156.

"Synthesis of Calixdendrimers", J. Vicens, *Arkivoc,* 2007, **5**, 49–60.

"A Dipyrenyl Calixazacrown Chemosensor for Mg^{2+}", A. Hamdi, S.H. Kim, R. Abidi, P. Thuéry, J.S. Kim, J. Vicens, *Tetrahedron,* 2009, **65**, 2818–2823.

"Molecular Machines", J. Vicens, *J. Incl. Phenom.,* 2000, **36**, 103–110.

In 2009, Prof. Jack Harrowfield will turn 65 and in 2010, Dr. Jacques Vicens will too, so that following the 10th International Conference on Calixarenes, July 13–15, 2009, Korea University, Seoul, Korea and roughly midway between their two birthdays, it is the perfect opportunity to celebrate their contributions to science. All the articles collected in this issue have been prepared by former co-workers, friends and family from across the world. They are all sincerely thanked for their collaboration and efforts to achieve this collection of manuscripts with different fields of research presented as "molecular recognition across disciplines" (chemistry, biochemistry, biology, and philosophy).