Academic Career

Ernesto Carmona (PhD degree, University of Seville, 1974, Professor F. González García) did postdoctoral work at Imperial College London with (the late) Professor Sir Geoffrey Wilkinson (1974-1977). He then returned to Sevilla, to become full Professor in 1983, where he established an independent research group in the area of Organometallic Chemistry.

Over the years, his research interests have concentrated in the activation of small, unsaturated molecules, like N2, CO, CO2, C2H4, etc., by compounds of several transition elements, in particular by low-valent molybdenum and tungsten compounds containing phosphine ligands, and also by organometallic compounds of nickel and palladium.

During the last 15 years his group has studied the capacity of Tp'Rh and Tp'Ir complexes (Tp'= hydrotris(pyrazolyl)borate ligand) to induce the activation of C-H bonds (to a lesser extent C-O and C-N bonds), and also to achieve the selective formation of C-C bonds. Recent work has demonstrated that unsaturated Tp'Ir(III) fragments are capable to effect the selective rupture of the Calkyl-O bond of alkyl aryl ethers, ROAr, in tandem reactions that imply multiple C-H bond activation, C-O cleavage and C-C bond formation. Moreover, these complexes are also capable to promote tautomerization of 2-substituted pyridines, and even of unsubstituted pyridine, to corresponding N-heterocyclic carbenes.

More recently his group has studied the structural characteristics of metallocenes of actinide and main group elements. Investigations on zinc cyclopentadienyls permitted the characterization of different zincocenes, among them the first molecular compound of zinc that contains a Zn-Zn bond. This discovery has opened the way to the preparation of other compounds of the [Zn-Zn]2+ unit and to the development of this new area of zinc chemistry. His interest in metal-metal bonded complexes has extended recently to encompass multiply bonded dimolybdenum and ditungsten compounds, in particular methyl, hydride and other complexes of molybdenum with quadruple or quintuple metal-metal bonds. Current research includes also the study of late transition metal complexes with bulky terphenyl phosphine ligands and their applications in some homogenous catalytic reactions.

Named lectures and distinctions

Solvay Prize for Research in Chemistry (1991).

Seaborg Lecturer in Inorganic Chemistry, University of California at Berkeley, 1994.

Maimónides Prize for Scientific Research, Junta de Andalucía (1994).

Iberdrola Prize for Scientific and Technological Research (1994).

Pacific Nortwest Inorganic Chemistry Lecturer for 2000 (Universities of Vancouver (BC), Simon Fraser, Victoria, Seattle, Calgary and Edmonton).

Hermanos Elhuyar - Goldschmidt Lecturership, Gesellschaft Deutsche Chemiker (GDCh) Spanish Royal Society of Chemistry (2000-2001).

Arthur D. Little Lecturer for 2001-2002, Department of Chemistry, Massachusets Institute of Technology (MIT).

Prix Franco-Espagnol (Catalán-Sabatier), Societé de la Chimie Française, 2004.

Research Prize and Gold Medal of the Spanish Chemical Society for 2006.

In 2005 he was elected a Member of the Spanish Royal Academy of Sciences.

Sir Geoffrey Wilkinson Lectureship and Silver Medal (Research in Coordination, Organometallic and Catalytic Chemistry) for 2007-2008, awarded by the Royal Society of Chemistry.

Luigi Sacconi Gold Medal 2007, from the Inorganic Chemistry Division of Italian Chemical Society.

He has been the 2009 CUSO Conferencier (Coordination Universitaire en Suisse Occidentale), Universities of Fribourg, Neuchatel, Basel and Geneva.

2010 EaSt CHEM Visiting Professor, Edinburgh and St. Andrews Universities.

In 2010 he was awarded with the Jaime I Prize for Basic Research.

2015 Malcolm Green Lecturer. Inorganic Chemistry Laboratories, University of Oxford.

For additional information see: http://www.iiq.csic.es/ecarmona