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Preface

Pascual Royo, a life devoted to the University

This special issue of the Journal of Organometallic Chemistry is dedicated to our teacher, friend and colleague Professor Pascual Royo on the occasion of his 65th birthday to celebrate his contribution to science through his remarkable achievements in inorganic and organometallic chemistry

Professor Royo was born in Zaragoza (Spain) on January 2nd, 1938, under the extreme commotion of the Spanish Civil War.

He graduated from the University of Zaragoza in 1961 and started work in industry, at 'Industrias Químicas del Ebro' (manufacturing sodium and potassium silicates). However, his real home was the university, and his natural talent for research and education soon led him back to Academia to begin and develop a solid and productive career despite the enormous economical and social advantages that industrial chemists had over academics in that era. He began his doctoral thesis in the University of Oviedo and obtained his PhD from the University of Zaragoza in 1967 for his work entitled 'New contributions to $TiCl_4$ and $TiOCl_2$ chemistry'. In both places his work was supervised by Professor Rafael Usón, the most productive and important inorganic chemist in Spain during the second half of the XXth century. Pascual Royo was the first among the many inorganic chemistry professors all over Spain who studied under Usón.

After completing his Ph.D, Profesor Royo joined Professor Ronald S. Nyholm's research group, at the

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William Ramsay and Ralph Forster Laboratory at University College in London, to spend 2 years studying the synthesis and chemical behaviour of transition metal pentafluorophenyl complexes. Unfortunately, Nyholm, who played a well-known role in the revival of chemistry, died suddenly in 1971. Without doubt, this was a great loss for chemistry and also for the incipient research career of Pascual Royo.

Back in Spain, Professor Royo was appointed 'Profesor Adjunto por Oposicion' in the University of Zaragoza in 1969, and later full Professor at the University of Extremadura (Badajoz) in 1972 at the age of 34. He moved to the University of Murcia in 1974 and stayed there for 4 years. One of us (JV) still works using the same desk he used for the first time 28 years ago. Finally, he moved to the university of Alcalá (Alcalá de Henares, Madrid) in 1978, where he remains today. Professor Royo's arrival to Alcalá coincided with the refoundation of this very old university. He supervised the first Ph.D graduates of the University and important equipment funding (magnetic balance, elemental analysis, IR, UV–vis and NMR) was obtained after his arrival to this university. His scientific achievements have greatly contributed to the prestige of this institution.

During his particular and unusual Spanish University tour he formed a research group which slowly grew, attracting an increasing number of students of great scientific worth from Spain and abroad, dealing with research areas of interest, progressively moving from post- to early-transition metal complexes.

At the initial period of his research career, Professor Royo was fascinated by the synthesis of perfluorophenyl thallium derivatives as excellent oxidant and transmetallating reagents to prepare new perfluorophenyl transition and post-transition metal derivatives. A rich contribution to the synthesis, reactivity and structural study of neutral, anionic and cationic Au, Pd, Pt, Rh, Ir, Ni, Co, As, Sb and Bi compounds is found in this first stage of his research. He used the pentafluorophenyl group, probably the more typical logotype of the organometallic chemistry in Zaragoza, which even today remains an extremely productive ligand.

This chemistry was developed at the University of Zaragoza as an extension of his post-doctoral work in London and sowed the seed for the development of organometallic chemistry in Spain. This work was continued by Professors Juan Fornies, José Gimeno and Antonio Laguna whose Ph.D Theses were supervised by Usón and Royo.

When Pascual Royo moved to the University of Extremadura, he left behind the research field opened in Zaragoza and shifted from the right to the left transition metal groups, studying the chemistry of cyclopentadienyl early transition metal derivatives (Ti, Zr, Hf, Nb, Ta, Mo and W). The work involved developing new synthetic methods in order to prepare a large variety of novel substances. His more fascinating challenge was to study the organometallic chemistry of the early transition metals and the interest for this research area in the University of Alcalá has not only been maintained but also strengthened.

Among the major scientific achievements of his group, we can mention the use of substituted and unsubstituted cyclopentadienyl rings as stabilizing ligands in the organometallic chemistry of the Group 4, 5 and 6 metals; the synthesis and the study of the structural and chemical behaviour of complexes of these elements in unusual oxidation states; the experimental study of the influence of the steric and electronic cyclopentadienyl factors on metal behaviour; the study of C–H activation processes leading to the synthesis of the first reported alkylidyne titanium complex $[(TiCp^*)_3(\mu_2\text{-}O)_3(\mu_3\text{-}CH)]$ and the study of insertion reactions that made possible to observe attractive C–C coupling processes (isocyanide insertion into the Ta–Me bond gives a series of aza–tantala–cyclo compounds).

More recently, his scientific interest has focused on the synthesis of neutral and cationic titanium and zirconium complexes as catalysts in the homogeneous olefin polymerization reaction from which attractive fundamental applications are being developed. The researchers studying the behaviour of these compounds need to be skilled enough to handle very reactive substances, sensitive to both air and moisture. As such, a very important part of the scientific work carried out in the Professor Royo's research groups has been dedicated to developing special work techniques and methodology.

He has also studied other Chemistry areas related to the transition metal complexes, such as the coordination chemistry of covalent halides, low oxidation state derivatives and carbonyl compounds.

In addition, over these years, Professor Royo has actively promoted very productive university–industry collaborations.

He has always shown a clear interest and devotion to both research and teaching, thus increasing the scientific knowledge and expertise of his group. The scientific output achieved over these years becomes apparent in several research areas developed by different Spanish organometallic groups headed by former students of Professor Royo. Many of his disciples are now prestigious researchers in Universities (Zaragoza, Oviedo, Castilla la Mancha, Autonóma de Madrid, Valladolid, Alcalá, Sheffield), research institutions (Spanish Superior Council for Scientific Investigation) and companies (Explosivos Rio Tinto, Repsol-IPF, General Electric ...) forming an extensive 'Royo's chemistry school' network.

One thing that must also be highlighted is the great deal of responsibility and the decisive prominence and

leading played by Professor Royo in the setting up of the Organometallic Group inside the Royal Spanish Society of Chemistry, of which he was the first President from 1980, the year of establishment, to 1988. As a result of these beginnings and the correct subsequent progress, the Organometallic Group enjoys now an enviable level of vitality and good health.

With regard to publications and honours, it is important to mention he has supervised more than 50 Ph.D theses and more than 65 degree theses. He has published more than 250 scientific articles and communications in international journals (more than 70 of them in the Journal of Organometallic Chemistry) and he is the author of about 10 patents and has given several lectures worldwide. He has written two textbooks on general and inorganic chemistry and participated in the translation into Spanish of five others. Several of his scientific achievements appear cited in Inorganic Chemistry textbooks. He has received many national and international awards, including the Alexander von Humboldt Forchungspreis (1991) (the first Spanish inorganic chemist receiving this appointment), Research Prize 'Consejo Social' of the University of Alcalá (1993), Prize 'Profesores Visitantes Iberdrola Ciencia y Tecnología' (1993–1996), and the Royal Spanish Society of Chemistry Award (1999). He is a member of the Royal Academy of Sciences of Zaragoza. He has been a member of several international committees such as the 'Working Party of Organometallic Chemistry of the Federation of the European Chemical Societies' (1978–1988), the IUPAC International Committee and the 'Planning Committee of the International Conferences on Coordination Chemistry'. He is also member of the board of several journals.

As well as his research and teaching activities, Professor Royo has had other duties and responsibilities in the university management. He has been head of the Inorganic Chemistry Departments in the Universities of Extremadura, Murcia and Alcalá and Research Vicechancellor and Chemistry Coordinator for the Preuniversity Course students in the last one.

When writing a preface dedicated to Professor Royo, one that knows him well cannot restrict himself to only emphasizing the dense *curriculum vitae* and focusing on his brilliant scientific contributions. One is also obliged to highlight the strong human qualities of the man. He pays careful attention to all his students, showing considerable respect and tolerance for all of them. Many of his coworkers and colleagues remember Professor Royo sitting behind his office table in a cloud of smoke reading scientific literature or carrying out scientific discussions providing new and innovative ideas to his students. Professor Royo is also a man of full integrity, very independently minded with a straightforward character who has never accepted outward assumptions and who has been well respected by all who have known him. He has a notably self-critical nature, and respects the intellectual independence of his coworkers, continuously encouraging their personal and professional development. In spite of being a hard worker, he never forgets that apart from work there is a time for other things beyond chemistry. Those of us who have had the privilege to work in his research group have enjoyed his warm hospitality sharing with him and Pilar (his wife) many special moments.

The biographical sketch traced in these lines reflects the personality of a life entirely devoted to Academia, hard to match, and constantly worried about the demands of such a career. Every one of us who has had the good luck and the pleasure to work in the laboratories of Professor Royo has benefited from his exemplary work capacity, research dedication, teaching gifts and personal quality.

On this your 65th birthday, your students (undergraduate, graduate and post-doctoral) disciples, friends and colleagues, from Spain and abroad, wish to thank you, with this special issue, for your teaching, advice and friendship. We also would like to extend our thanks to Pilar, your lovely and supportive wife along your career in both the good and difficult times. Thanks also to Ana, Beatriz, Eva and María.

Nevertheless, this is not the end of the way. Don't forget, you still have many things to do.

Muchas gracias y Feliz Cumpleaños.

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