



Professor Rafael Usón – Birthday Dedication

On March 27 1986 Professor Rafael Usón, an eminent Spanish scientist in the field of inorganic and organometallic chemistry, will celebrate his 60th birthday.

Professor Usón was born in Saragossa in 1926, where, at the Facultad de Ciencias of the University he graduated in 1947 and was awarded his Ph.D. in 1950.

Thereafter he spent two years of postdoctoral work with Professor E. Wiberg at the Institut für Anorganische Chemie der Universität München, doing research on aluminium and boron hydrides and halohydrides.

In 1954 he returned to the University of Saragossa as a lecturer of Inorganic Chemistry. Simultaneously he became research fellow of the Consejo Superior de Investigaciones Científicas (C.S.I.C.), where he was later promoted to the highest scientific rank.

In 1960 he was awarded the chair of Inorganic Chemistry at the University of Oviedo and in 1967 he returned again to Saragossa as Professor and Head of the Department of Inorganic Chemistry, a position which he is still holding today.

In its initial stages Professor Usón's research was focussed on the chemistry of coal and fuels, on the elucidation of problems arising in extractive metal-

lurgy, and on the chemistry of non-aqueous solvents (S_2Cl_2 and CH_3COCl). Later on he also began to dedicate his attention to the study of coordination chemistry of metal ions (manganese and titanium).

Finally in 1969 he started to work in a new area of investigation: organometallic chemistry, first concentrating on the study of organometallic Ti and Bi complexes and later on extending his interest to the chemistry of Au, Ag, Ni, Pd, Pt, Rh and Ir derivatives, which subsequently became his main field of interest.

A very important part of his scientific work on organometallic compounds has been dedicated to the preparation and study of pentafluoro- and pentachloro-phenyl complexes of Au, Ag, Ni, Pd and Pt, developing new, highly versatile routes, which enable the preparation of a large variety of complexes of different stoichiometries: cationic, or neutral, as well as anionic compounds.

Some of the homoleptic complexes of the latter type prepared in his laboratory ($[M(C_6X_5)_4]^{-n}$ ($M = Au, Ni, Co, Pd, Pt; X = F, Cl$) are very stable, despite the absence of other ancillary ligands and display a multifarious reactivity.

His thorough study of the behaviour of these compounds has allowed the synthesis of derivatives in unusual oxidation states, for example of organometallic

Pd(IV) complexes: $\text{Pd}(\text{C}_6\text{F}_5)_2\text{Cl}_2(\text{L-L})$ (L-L = N donor chelates) or of the first reported mononuclear Pt(III) derivative: $(\text{NBu}_4)[\text{Pt}(\text{C}_6\text{Cl}_5)_4]$.

An important milestone in Professor Usón's work has been his finding that these anionic complexes present basic properties, so that their treatment with Ag^+ salts (Lewis acids) permits the synthesis of heteropolynuclear complexes containing Au–Ag or Pt–Ag bonds: $([\text{AuAg}(\text{C}_6\text{F}_5)_2\text{L}]_n)$ or, respectively, $(\text{NBu}_4)_2[\text{Pt}_2\text{Ag}(\text{C}_6\text{F}_5)_4\text{Cl}_4]$, $(\text{NBu}_4)[\text{Pt}_2\text{Ag}(\text{C}_6\text{F}_5)_6\cdot\text{OEt}_2]$, $(\text{NBu}_4)[\text{Pt}_2\text{AgCl}_2(\text{C}_6\text{F}_5)_4\cdot\text{OEt}_2]$, $[\text{Pt}(\text{C}_6\text{F}_5)_3\text{LAG-PPh}_3]$, a field to which he is presently paying special attention.

On the other hand, he has perfected preparative methods for the synthesis of bi- and poly-nuclear complexes with halide-, pseudohalide- or biimidazole-bridging ligands, and has thus been able to obtain mixed Pd, Rh; Pd, Au; Pt, Au and Rh, Au derivatives.

His development of an extensive preparative chemistry of cationic rhodium and iridium compounds, amongst them a large number of areno complexes, is also noteworthy, not to forget his contribution to the evaluation of new homogeneous catalyzers.

His scientific work has given rise to some 250 research papers and his influence on the development of organometallic chemistry in Spain has been paramount; since most of the Spanish groups which are now engaged in research in organometallic chemistry are headed by former students of Prof. Usón.

His working life has been entirely dedicated to the University and his results are outstanding. He has directed 40 Doctoral Theses and has trained a large number of scientists in his laboratories, some of them are now working in industries while others continue his work at different universities. At present, 8 Professors and 14 Lecturers of inorganic chemistry count among his disciples.

Professor Usón is very independently minded and of absolute intellectual integrity. This together with his extraordinary self criticism has been instrumental in increasing the scientific level of his group. Moreover, he has always respected the intellectual independence of his disciples and has enthusiastically supported their personal and scientific promotion.

His intellectual capacities, his enthusiasm and, last but not least, his utter dedication to his work has been a decisive force in the development of Spanish inorganic chemistry.

On his 60th birthday, his disciples, friends and colleagues in the scientific community wish to express to him their grateful recognition for the work he has done, and hope that his activity may continue for many years to come. We all wish him a very happy anniversary.

P. Royo