

Obituary; Professor Helge Willner



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(Universidad Nacional de La Plata, Argentina).

With the recent passing of Prof. Helge Willner, the Fluorine Chemistry community has lost one of its most prolific contributors, a very kind friend, colleague and an excellent teacher. Prof. Willner passed away on September 4 at the age of 75.

Prof. Willner was born on March 7, 1947 in Hamm, Germany, and completed an apprenticeship as a *Chemielaborant* (chemical lab technician) at the Schering AG. After attending an Engineering School in Essen, he continued with studying chemistry at the Westfälische-Wilhelms-Universität in Münster. In 1974, he obtained his doctoral degree under the supervision of Prof. Dr. H. J. Becher. After a research visit in 1977 at the University of Virginia, Charlottesville, USA with Prof. Lester Andrews as his host, he habilitated at the Ruhr-Universität in Bochum, where he worked on low valent sulfur and selenium fluorides.

Prof. Willner received an appointment as a C3 Professor at the Universität Hannover where he stayed until 1998. During this time, he visited the University of British Columbia in Vancouver, Canada starting his long-lasting collaboration with Prof. Felix Aubke. Together with Prof. Aubke, he established the field of carbonyl cations of the late transition metals using superacidic media. The first transition metal carbonyl cation in the series was $[\text{Au}(\text{CO})_2]^+$ which they obtained using fluorosulfonic acid. Later, they described a set of further ground-breaking homoleptic transition metal carbonyl cations including the trication $[\text{Ir}(\text{CO})_6]^{3+}$. A guest professorship at the University La Plata in Argentina followed that led to long-lasting fruitful collaborations with researchers in Argentina.

In 1998, he received and accepted a *Ruf* as a C4-Professor at the Gerhard-Mercator Universität Duisburg, followed by another move to the Bergische Universität Wuppertal in 2003 where he stayed until his retirement in 2013.

Prof. Willner's extensive scientific accomplishments are characterized by a remarkable breadth and many productive national and international collaborations. His international collaborations were recognized by the Dr. Luis Federico Leloir 2011 Prize for International Cooperation in Science, Technology and Innovation by the Argentina Ministry of Science, Technology and Productive Innovation. His remarkable contributions to chemistry include matrix isolation, characterization of gas-phase molecules, vibrational spectroscopic analyses, azide chemistry, transition-metal carbonyl cations, chalcogen chemistry, and borate chemistry. The latter led to the development of weakly coordinating anions, such as the tetrakis(trifluoromethyl)borate anion $[\text{B}(\text{CF}_3)_4]^-$, which he obtained by fluorination of the tetracyanoborate anion $[\text{B}(\text{CN})_4]^-$ using ClF_3 or ClF . A further major contribution to the field of boron chemistry was the discovery of the tris(trifluoromethyl)borane carbonyl $(\text{CF}_3)_3\text{BCO}$. In addition, he made numerous contributions in the field of applied and materials science, e.g. to the field of conducting salts. In general, his chemistry was characterized by ingenious ways of solving experimental problems for characterization of highly moisture-sensitive and reactive compounds. For example, the "Young-NMR tube", which serves the experimental community as an indispensable tool, had been developed by Profs. Gombler and Willner in collaboration with J. Young, Scientific Glassware Ltd. in 1984.

Prof. Willner will be deeply missed by his friends and colleagues from the fluorine chemistry community.

Maik Finze (Julius-Maximilians-Universität Würzburg) and Michael Gerken (University of Lethbridge)