

Herbert Schumann (1935–2010)

Herbert Schumann, Emeritus Professor of Inorganic Chemistry at the Technical University of Berlin, passed away on January 12th, 2010 at the age of 74 after a short but severe illness.

Schumann was born on August 6th 1935 in Coburg, where he attended school. After completing his school education in 1954, he studied chemistry at the LMU in Munich. Upon completing his *Diplom* in 1960, he chose to carry out doctoral studies in Max Schmidt's research group. After finishing his doctorate in 1962, he followed his supervisor to Marburg in order to be his scientific assistant, and in 1965 he moved again to Würzburg. There he completed his *Habilitation* in 1967 in inorganic chemistry and was given the title of lecturer. In 1970 he was made professor of inorganic chemistry at the TU Berlin, where Schumann felt right at home, and for this reason he turned down a position at the University of Dortmund in 1980. He was active at the TU Berlin until his retirement in 2003 and beyond, and he left behind a rich legacy of scientific achievement.

The research interests of Herbert Schumann were wide and varied. While he was still a lecturer in Würzburg, he investigated organometallic compounds of Group 14 elements; some of the compounds developed during this work, such as $\text{P}(\text{SnMe}_3)_3$ ^[1] and $\text{Te}(\text{SiMe}_3)_2$ ^[2], have found application in the introduction of phosphorus and tellurium into complexes. The synthesis of organotin compounds was also a central theme of his research at the TU Berlin; this topic was studied in a collaboration with J. J. Zuckerman (University of Oklahoma, USA) that lasted almost 30 years and in which organotin biocides,^[3] chiral organotin hydrides,^[4] and spectacular molecules such as decabenzylgermanocene and decabenzylstannocene were synthesized.^[5] A collaboration with the company Schering AG and support from the BMBF (German Federal Ministry of Education and Research) resulted in the synthesis of water-soluble, nontoxic, tin-rich dendrimers that are suitable for use as X-ray contrast agents. Between 1975 and 1997, Herbert Schumann, together with his wife Ingeborg, published 25 volumes in total on "Organotin Compounds" for the Gmelin Handbook of Inorganic and Organometallic Chemistry.^[6]

The synthesis of intramolecularly donor-stabilized aluminum, gallium, and indium compounds of the type $\text{R}_2\text{M}(\text{CH}_2)_3\text{NR}'_2$ formed a further theme of his work after 1980. The intramolecular donor stabilization leads to a drastic decrease in the sensitivity of the compounds towards hydrolysis and oxygen, and thus allows them to be used as MOCVD precursors. Several of these compounds,

such as the indium species DADI, are marketed today for the technical deposition of indium phosphide.

Herbert Schumann's ground-breaking work on organolanthanoid compounds is known and valued internationally.^[7] This research area was systematically developed by his research group since the mid-1970s. Numerous problems in preparation and analysis had to be overcome before new organometallic complexes of the paramagnetic lanthanoids, which often have remarkable molecular structures and properties, could be synthesized and characterized. For example, lanthanoids in the oxidation state +3 form trianionic hexamethyl complexes.^[8] The first organolanthanoid compound with a direct bond between the lanthanoid and a third-row element,^[9] a series of organolanthanoid hydrides,^[10] and the first NHC^[11] and olefin complexes^[12] of the lanthanoids were synthesized in Schumann's research group. A prolific and intensive collaboration developed in this research with the G. A. Razuvaev Institute of Organometallic Chemistry of the Russian Academy of Sciences in Nishny Novgorod (M. N. Bochkarev and I. L. Fedushkin).

Further studies, some of which were in collaboration with partners in industry, involved alkaline-earth metallocenes, lanthanoid-containing contrast agents for magnetic resonance imaging, and catalytically active transition-metal complexes with phosphane, stibane, and bismutane ligands for the hydrogenation and isomerization of olefins. The latter investigations were carried out in close collaboration with international research partners (J. Blum and M. Michman (Hebrew University Jerusalem, Israel), G. B. Deacon (Monash University, Melbourne, Australia), and J. Sun (Zhejiang University, Hangzhou, China)).

Those who were lucky enough to be associated with Herbert Schumann over the last 25 years were part of an international group, and would come into contact with colleagues, visiting scientists, and guest speakers from many countries. He was host to many Alexander von Humboldt Foundation scholars and a large number of visiting professors from overseas. Numerous PhD students and researchers from Germany and elsewhere came to Berlin to be a part of his research group. In total, 107 PhD students attained their doctoral degrees under his supervision, and a further 11 completed their *Habilitation*. Although Herbert Schumann did not go overseas during his studies, he made every effort to ensure that his co-workers could have international experience. In 1981, together with the city government of Berlin, he initiated an official student exchange program between the TU Berlin and the University of Oklahoma; this program celebrated its 25th anniversary in 2006. During or after completing their doctoral degrees, many of his



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students worked in the laboratories of his numerous foreign collaboration partners.

Herbert Schumann was an enthusiastic and inspiring teacher. His practical lectures inspired generations of students to become interested in chemistry. Supporting young researchers was particularly important to him. He was also highly active in his efforts in academic administration; as head of the institute for inorganic and analytical chemistry and later the newly founded institute for chemistry, he made his mark on inorganic chemistry at the TU Berlin over many years. His organizational skills could be seen in the renovation of the old chemistry building while the building was still in use. The renovation took almost ten years and turned the oldest chemistry building at a German university into one of the most modern. He was willing and able to resolve problems quickly and clearly; he held his opinions with passion, but he never bore a grudge.

Herbert Schumann had a wide range of interests and was enlivened by a creative restlessness. He often traveled to conferences, even when these brought him to distant venues in India or China. By this means he was able to keep contact with countless colleagues throughout the world. He was awarded with no less than eight honorary professorships in many countries, including Israel, Australia, and Russia. He was always open to new things. For example, in 1986, at the age of 50, he found out that a former doctoral student in the USA had obtained a pilot's license, and decided he would also learn to fly small planes. This plan no doubt amused his students at the time, as the flying lessons took up much of the next nine months and had to be carried out 250 km away in Braunschweig (Berlin was still a no-fly zone at the time). After the fall of the Berlin wall, the airspace above Berlin was opened up, and, until quite recently, he invited friends and guests for flights over and around Berlin.

Herbert Schumann was a social person, and the Schumanns had an open-door policy. Many visitors to the institute for chemistry at the TU Berlin came to know the legendary hospitality of the Schumanns; long after dinner, guests would often sit together with the hosts over a Frankonian wine.

When Schumann learned of his serious illness in the summer of 2009, he took the news calmly, and

did not hide the fact. He was still interested in "his institute", which he regularly visited until December 2009. His many colleagues, students, friends, and all who know him have lost an outstanding master of his field, a dear teacher, and a good friend and colleague. Herbert Schumann leaves behind his wife Ingeborg, three grown-up children Matthias, Susanne, and Stefanie, and four grandchildren.

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- [1] H. Schumann, O. Stelzer, *Angew. Chem.* **1968**, *80*, 318; *Angew. Chem. Int. Ed. Engl.* **1968**, *7*, 300.
- [2] H. Schumann, R. Weis, *Angew. Chem.* **1970**, *82*, 256; *Angew. Chem. Int. Ed. Engl.* **1970**, *9*, 246.
- [3] K. C. Molloy, T. G. Purcell, E. Hahn, H. Schumann, J. J. Zuckerman, *Organometallics* **1986**, *5*, 85.
- [4] H. Schumann, B. C. Wassermann, E. Hahn, *Organometallics* **1992**, *11*, 2803.
- [5] H. Schumann, C. Janiak, E. Hahn, J. Loebel, J. J. Zuckerman, *Angew. Chem.* **1985**, *97*, 765; *Angew. Chem. Int. Ed. Engl.* **1985**, *24*, 773.
- [6] "Sn, Organotin Compounds, Part 25. Dinuclear Compounds containing only Tin–Carbon Bonds, Compounds with Tin–Carbon and Tin–Hydrogen, –Halogen, or –Pseudohalogen Bonds. Compounds with Tin–Carbon and Tin–Oxygen Bonds": H. Schumann, I. Schumann, *Gmelin Handbook of Inorganic and Organometallic Chemistry*, 8th ed., Springer, Berlin, **1997**.
- [7] a) H. Schumann, J. A. Meese-Marktscheffel, L. Esser, *Chem. Rev.* **1995**, *95*, 865; b) F. T. Edelman, D. M. M. Freckmann, H. Schumann, *Chem. Rev.* **2002**, *102*, 1851.
- [8] H. Schumann, J. Pickardt, N. Bruncks, *Angew. Chem.* **1981**, *93*, 127; *Angew. Chem. Int. Ed. Engl.* **1981**, *20*, 120.
- [9] H. Schumann, I. Albrecht, E. Hahn, *Angew. Chem.* **1985**, *97*, 991; *Angew. Chem. Int. Ed. Engl.* **1985**, *24*, 985.
- [10] H. Schumann, W. Genthe, E. Hahn, M. B. Hosain, D. van der Helm, *J. Organomet. Chem.* **1986**, *299*, 67.
- [11] H. Schumann, M. Glanz, J. Winterfeld, H. Hemling, K. Kuhn, T. Kratz, *Angew. Chem.* **1994**, *106*, 1829; *Angew. Chem. Int. Ed. Engl.* **1994**, *33*, 1733.
- [12] H. Schumann, M. Glanz, J. Winterfeld, H. Hemling, N. Kuhn, H. Bohnen, D. Bläser, R. Boese, *J. Organomet. Chem.* **1995**, *493*, C14.

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