

Hans Georg von Schnering (1931–2010)

Hans Georg von Schnering, Emeritus of the Max Planck Institute for Solid-State Research in Stuttgart, died on July 22, 2010. His research in inorganic chemistry and crystal chemistry was and remains groundbreaking.

He was born on July 6, 1931 in Ranis/Thuringia as the son of a medical doctor. Until the end of the war he went to school in Messow and Crossen, places in present-day Poland, as well as at the boarding school of the *Herrnhuter Brüdergemeinde* in Niesky/Oberlausitz. With, in his words, the total loss of scholastic knowledge, he learnt to become a baker during the chaos of the post-war years before the family came together again in 1946 near Münster in Westphalia. After his *Abitur* in Münster, he enrolled in chemistry, physics, and mathematics at the university in 1951, thereby abandoning his original aim of medicine. He concluded his studies with a *Diplom* in 1958 working with Wilhelm Klemm and a doctorate in 1960 with Rudolf Hoppe. In the year prior to completing his doctorate, he married Christa Schulze-Rhonhoff; together they had daughters Christine, Renata, and Daniela. Chemistry also belonged to the family: the reverse of a surviving wedding card is filled with formulae. Enthusiasm for chemistry and high-performance sport characterized his student years. He achieved many victories, crowned by winning repeatedly the title of Westphalian Champion, West German Champion, and German University Champion in international pentathlon.

Even as graduate student he took a deep interest in crystal-structure determination as guest researcher with Zemann in Göttingen, and after gaining his doctorate he systematically built up modern structural analysis in Münster. With a program system developed by him and mathematicians at the university he created an instrument that not only served the solution of problems of crystal structures from his own research but benefited different work groups in the institute and other universities. Thus his *Habilitation* in 1964 with the title "*Beiträge zur Chemie binärer und ternärer Halogeno- und Oxoverbindungen der Metalle*" also contained pioneering structural investigations on cluster compounds of the transition metals synthesized by Harald Schäfer. The article published together that same year in *Angewandte Chemie* today is still a milestone in this area.^[1]

Hans Georg von Schnering's talent was recognized early. He turned down appointments at the Technical University Karlsruhe and the University of Frankfurt, but instead remained in Münster, and in 1966 he was appointed *Ordinarius* for Special Inorganic Chemistry. In 1975 he accepted the position of Director at the Max Planck Institute

for Solid-State Research in Stuttgart, a decision that was not easy for him and his family. Even after his retirement in 1997 he was scientifically active, attested by the many publications during the period that followed.

The work recorded in about 1000 publications can only be outlined here. In Münster he sought in particular the link between solid-state chemistry and molecular chemistry. The chemistry of the silicides, phosphides, and arsenides of electropositive metals experienced a true heyday, with new Zintl phases and a plethora of polyphosphides. Solid-state structures were of special interest, as were reactions with the formation of discrete molecules, and a comprehensive structural systematic of the phosphanes, silanes, and carbosilanes was developed. Research topics included homonuclear bonds in polyanions and in complex compounds with metal-metal bonds^[2] and the chemistry of complex fluorides, hydroxides, and hydrates. In the latter, the precise localization of the hydrogen atoms was established by the calculation of lattice potentials, which rather equaled experimental determination by neutron scattering.

In Stuttgart, his interests also included the coupling of chemistry and physics. Quantum-mechanical calculations for molecules and crystals belonged to his repertoire early on. Together with Savin, Nesper, and his friend of many years Sten Andersson, important work on the analysis and graphical representation of chemical bonds and the comprehensive classification of structures by symmetry was developed. The electron localization function (ELF) applied to solids^[3] is used worldwide, and the systematization of crystal structures with the help of curved surfaces as space partitioners^[4,5] allowed far-reaching predictions, for example on ion movements in solids. Hans Georg von Schnering possessed a phenomenal ability to recognize important details of a crystal structure and correlations between structures and to remember them. For example, it was reported in the literature that a $\text{CuF}_2/\text{CuCl}_2$ mixture reacted to $[\text{ClF}_6][\text{CuF}_4]$ by shock-wave compression at a concrete wall, which was supported by an X-ray structure analysis. On the basis of marginal inconsistencies in the data he established that the compound was the trivial species $[\text{Cu}(\text{H}_2\text{O})_4][\text{SiF}_6]$.^[6] What a surprise on the other hand that the spaces in the structure of quartz and starch is divided by identical curved surfaces.^[7]

Hans Georg von Schnering was the recipient of many honors for his research. Amongst others, he received the Alfred Stock Prize of the German Chemical Society (GDCh, Gesellschaft Deutscher Chemiker), was honorary doctor of the universities of Geneva, Karlsruhe, and Würzburg and a member of several academies, just to mention the Akademie der Naturforscher Leopoldina as one.



Hans Georg von
Schnering

Personally we remember a man of direct words and strong opinions who supported others with great commitment and intuition.

Arndt Simon

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