

## Obituary

### Fritz H. Laves 1906–1978

Fritz H. Laves died unexpectedly on 12 August 1978 from a stroke, during his summer vacation in Laigueglia. Crystallographers throughout the world have lost a leading personality and a pioneer in crystal chemistry. Laves was born in Hannover and studied mineralogy at the Universities of Innsbruck and Göttingen. He finished his thesis in Zürich under the guidance of Paul Niggli. Published in full in the *Zeitschrift für Kristallographie*, his thesis made valuable contributions to basic crystal structure principles using the idea of 'homogeneous and heterogeneous correlations' between atoms. In 1929, he was invited by V. M. Goldschmidt to Göttingen, where he started his well-known work on the crystal structures of metals and alloys. Crystal structure determination *per se* fascinated him less than the attempt to understand general structural principles from a crystal-chemical point of view. This task led him toward general rules for crystal chemistry, among them being the well known concept of the 'Laves phases' with composition  $AB_2$ . The stoichiometry of these phases is caused by the favourable close packing of spherical atoms, with a radius ratio of approximately 1.2:1, rather than as a consequence of chemical bonding. Laves's interest generally focused on pathologically difficult rather than routine crystal structures, specifically on those which occur during solid-state reactions, such as the feldspar structures in all their complexity. His ability in applying all available methods, including infrared absorption, nuclear magnetic resonance, primary and secondary electron microscopy, *etc.*, to give a better understanding of these disordered structures was typical of his approach.

In his professional career, Laves was Head of the Mineralogical Department at the Universities of Halle and Marburg/Lahn, respectively from 1943 to 1945 and from 1945 to 1948, guest professor and full

professor at the Geological Department of the University of Chicago from 1948 to 1954, and Head of the Mineralogical Department at the University and the Eidgenössische Technische Hochschule of Zürich from 1954 to 1976, succeeding his former teacher, the late Paul Niggli. Laves also held numerous offices in national and international bodies: He was a member of the Executive Committee of the IUCr between 1957 and 1963, serving as its Vice-President from 1969 to 1972. He was President of the Deutsche Mineralogische Gesellschaft, and chairman and member of various boards and commissions. He was tireless in his endeavours to restore high academic standards in Germany following World War II, and was instrumental in reviving the *Zeitschrift für Kristallographie* after that war; until recently, he was a member of its editorial staff. He was honoured by election as a fellow of a number of scientific academies and was awarded several medals in recognition of his scientific accomplishments.

Fritz Laves was a man of gentle disposition and modest personal needs, but he was tough in negotiating scientific matters. His willingness to cooperate with anyone was outstanding; on the other hand, he attempted to escape the bustle about him, well knowing that ingenious ideas are born in a 'silent room' – nowadays even more so than before. This was the ultimate reason why the invitation to succeed Max von Laue at the Fritz-Haber-Institut in Berlin was not accepted – it being 'too large' and 'too time-consuming' for a man of his nature. In March 1976, Fritz Laves and most of his friends celebrated his 70th birthday coupled with his retirement from office at Zürich. Many papers were presented there and most of them had, at least to some extent, a close relationship to his former work, an indication of the wide range and high quality of his scientific work. Fritz Laves contributed his full share to the development of crystallography!

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