

## In honour of the 60<sup>th</sup> birthday of Wolfgang Friedrich Müller

The microstructure of natural minerals and synthetic phases studied by transmission electron microscopy forms the core of the scientific work of Wolfgang Müller. The deviations from the ideal crystal structure and their influences on the physical and chemical properties are the main field of his research activities.

Wolfgang Müller was born on December 22<sup>nd</sup>, 1939, in Berlin, Germany. After several moves during the war and post-war times, his family finally settled down in 1949 in Gräfelfing near München. After school, he studied physics and geology in München, then mineralogy and physical and inorganic chemistry in Tübingen. Wolfgang Müller worked towards his doctorate at the Institute of Mineralogy and Petrology at the University of Tübingen under supervision of Siegfried Haussühl, finishing his thesis in 1965 on dissolution kinetics of crystals in water and aqueous solutions. Then, he became a research associate of Wolf Freiherr von Engelhardt at the same institute, changing his field of interest to shock-wave metamorphism and to shock effects in minerals. He pioneered transmission electron microscopy (TEM) in the field of shock-induced deformation structures and experimentally shock-loaded minerals. As a co-investigator of the NASA, he studied shock effects in lunar samples by using TEM. The subject matter suited his aptitude and talent as a mineralogist and transmission electron microscopist.

In 1971, Wolfgang Müller obtained a one-and-half-year scholarship from the Deutsche Forschungsgemeinschaft, as he went together with his wife, daughter and son for a research visit to the Department of Materials Science and Engineering at the University of California, Berkeley, USA. There, he investigated feldspars and pyroxenes by using high-voltage TEM together with Gareth Thomas and Hans-Rudolf Wenk.

After his return from the United States, Wolfgang Müller worked as a collaborator of Masaaki Korekawa at the Institute of Crystallography at the University of Frankfurt am Main, where he completed his habilitation and received the *venia legendi* for Mineralogy and Crystallography in 1975. His further research activities led him to TEM characterization of deformation structures and structural phase transitions of minerals as well as submicroscopic phase assemblages of minerals and rocks, including lunar and meteoritic samples, using these features as indicators for the thermal and mechanical history.

In January 1977, Wolfgang Müller was appointed professor of the Institute of Mineralogy at the Technische Hochschule Darmstadt. The projects of the next years, which reflect the trained mineralogist and transmission electron microscopist, concentrated on the investigation of microstructures, deformation behaviour, and phase transitions not only of natural materials, but also of synthetic technical materials, like high- $T_c$ -superconductors and high-performance ceramics. His scientific activities are documented by more than fifty extended publications in international journals. Furthermore, an impressive laboratory, filled with equipment covering a wide range in analytical transmission and scanning electron microscopy, to which competent colleagues were given access, was built at his institute. Due to his farsightedness, the transmission electron microscope was completed not only by an energy-dispersive X-ray microanalysis unit, but also by a parallel electron energy-loss spectrometer — the newest at that time and one of the first to be delivered in Europe — which opened new fields of research in crystal chemis-



try of minerals. After a while, Wolfgang Müller could count on a series of committed masters and doctorate students for the implementation of the institute's research projects.

Apart from research, Wolfgang Müller has been heavily committed in teaching and in scientific administration, both as managing director of the institute and as dean of the faculty Geowissenschaften und Geographie at the Technische Universität Darmstadt — for the continuation of which he played a crucial role. Besides, he has been assuming national and international responsibilities, such as member of the advisory board of the Deutsche Mineralogische Gesellschaft (DMG) (1979-1981), member of the Commission on Electron Microscopy of the International Mineralogical Association (1981-1987), secretary of the DMG (1983-1989), representative of the DMG in the European Mineralogical Union (EMU) (1987-1994), speaker and member of the commission for university issues of the DMG (1993-1999), and, last but not least, president of the European Mineralogical Union (1996-2000). In addition to these activities, Wolfgang Müller took upon himself yet more commitments, namely as initiator of the issue of *Mitteilungen der DMG* during his period as secretary of the DMG, and — together with Giovanni Ferraris — of the *EMU Notes in Mineralogy* during his period as president of the EMU.

Although nearly working to capacity, Wolfgang Müller nonetheless always uses his sabbaticals to further scientific progress by research visits, to the Department of Physics at the University of Essex in England (summer 1983), to the Laboratoire de Minéralogie Physique at the University of Rennes in France (summer 1991), and to the Department of Materials Science at the Technical University of Tampere in Finland (summer 1995). The Erasmus programmes allowed him to give lectures for one or two weeks at the University of Orléans, France, every year between 1989 and 1993.

In private life, Wolfgang Müller finds tranquillity and equilibrium in making music with his family, photographing and mountaineering, with which he feels no less connected than with his science. His friends, colleagues and students take great pleasure in working together with and learning from him. For the above-mentioned reasons, colleagues and friends have compiled this special issue in appreciation of and dedication to Wolfgang Müller, an outstanding and pioneering scientist.

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