Editorial

Dear Readers of CHIMIA,

Mineralogy is a scientific discipline of the earth sciences that has been taught in Switzerland at the universities of Basel, Bern, Fribourg, Geneva, Lausanne, Neuchatel and Zurich (also at ETH) since the 19th century. The International Mineralogical Association, IMA, adopted in 1995 the following definition for minerals: "A mineral is an element or chemical compound that is normally crystalline and that has been formed as a result of geological processes". Originally, the field of mineralogy started out as a rather descriptive branch of science. Crystal form, symmetry, composition and mineral occurrence were the original topics of research. Increasingly more interest was then focused on other mineral properties such as luster, transparency, color, streak, cleavage, fracture, tenacity, hardness, magnetism, fluorescence, and radioactivity. Mineral classification was another challenge, which was revived in the early 20th century when X-ray diffraction methods allowed the determination of the crystal structure. Even today, between 30 and 50 new minerals are defined each year.

Currently, not only mineral structure, chemistry and physical properties stand in the forefront of a mineralogist's interest, but also processes, such as mineral formation, transformation and dissolution. In particular, the experimental ability to study minerals at elevated temperature and pressure conditions has increased the scope of the discipline. Following the recent trends in science the term mineralogy has almost faded and a new name has been implemented: "studies of earth materials". Mineralogy has advanced to materials sciences of natural inorganic matter including their synthetic analogs. Crystal physics and crystal chemistry have become fixed disciplines within a mineralogy curriculum. Modern mineralogical research also focuses on a broad spectrum of solid state analytical techniques.

The collection of articles presented in this CHIMIA issue have all been written by internationally leading mineralogists to emphasize the broadness and diversity of this modern and attractive field of science at the dawn of the 21st century. Three manuscripts (***Brugger*** *et al*., ***Majzlan,*** and ***Nasdala*** *et al*.) are devoted to the processes and products of mineral dissolution, decomposition and formation. ***Gilberto Artioli*** demonstrates the power of mineralogy to study cultural heritage materials and presents three examples. ***Volker Kahlenberg*** and ***Nicola Döbelin*** *et al*. report on structure, properties and technological applications of synthetic analogs of minerals within an interdisciplinary framework. ***Sergey Krivovichev*** *et al.* introduces us to the complex structure of a natural layered double hydroxide (LDH), a family of minerals with technologically important synthetic analogs. ***Beda Hofmann*** informs us on what we may learn from meteorites found on earth and ***Anna Malsy*** and ***Leonhard Klemm*** decipher the provenance and mining source of gem spinels from trace elements and crystal inclusions. ***Mickey Gunter*** discusses the current dilemma dealing with the relationships between our knowledge of handling asbestos and an understanding of its risk potential in the built environment versus the natural environment.

Thomas Armbruster

Prof. Dr. Thomas Armbruster is head of the Mineralogical Crystallography Group, part of the Institute of Geological Sciences at the University of Bern, Freiestr. 3, CH-3012 Bern, Switzerland; e-mail: thomas.armbruster@krist.unibe.ch

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