German Mineralogical Society

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FROM THE PRESIDENT

Friedhelm von Blanckenburg

Dear members and friends of the DMG,

Let me introduce myself. I am Friedhelm von Blanckenburg, a geologist by training turned to an isotope geochemist. I am based at the GFZ German Research Center for Geosciences at Potsdam where I head the Earth Surface Geochemistry group, and at the Institute of Geological Sciences at Freie Universität Berlin. Readers of *Elements* may have already seen my photo: I was *Elements'* geochemistry editor from 2016 to 2018. Since January 2021, I have the pleasure to serve as your DMG (German Mineralogical Society) President. Let me first express my gratitude to Reinhard X. Fischer, who has steered the DMG diligently through these turbulent past two years, and to Treasurer Gerd Franz and Secretary Klaus-Dieter Grevel, plus a substantial team of scientists and very engaged students on the board of the DMG. Not much can go wrong with this team! With 1,500 members and well-attended annual meetings, the DMG is an active and healthy society.

Being at the head of a scientific society means being engaged with its science. The DMG encompasses mineralogy and petrology, geo- and cosmochemistry, crystallography and material sciences, and disciplines related to these fields. These are at the heart of some of the most exciting fundamental geoscience topics today. We investigate the interactions that make the interior of our planet and its plates move, interactions that depend on energy, on gradients in materials, and the crystallographic properties of those materials. Petrologists and geochronologists unravel the exact pathways and timing by which mountains move from deep collision zones to the top of the planet, and the exact composition and dynamics of volcanic melts that lead to eruptions. Geochemists explore the destruction of mountains by chemical weathering and how this process regulates Earth's climate over millions of years by withdrawing atmospheric CO_2. Mineralogists are at the frontier on planet Mars (if not in person) and on comets, using sophisticated miniaturized analytical instruments to probe the conditions that might make life possible there. Cosmochemists reconstruct, with ever increasing detail, the processes and chronology of planetary accretion, the formation of the Moon, and the first presence of our oceans. We investigate the environment that allowed the early formation of life, the co-evolution of Earth's minerals and microbes, and the rocks and soils that support life in the modern Earth. Sometimes it is useful to remind ourselves that we are, in fact, at the centre of the big questions that trigger mankind's curiosity for discovery.

Our expertise also extends to addressing the grand challenges that face humanity today. Let's look at the conversion of our economies to a carbon-free energy production within the next 30 years, as foreseen in the 2015 Paris Agreement on climate. This transition requires massive amounts of rare (so called "critical") metals such as Li for battery storage, or Nd for wind turbines and other rare earth oxides for superconductors. These metals have to be found, produced at 3 to 10 times the rate of today, and also need to be recycled. All of this must be achieved without repeating the mistakes of the past, i.e., harming the environment and, thus, the communities living near such mining activities. Photovoltaic production of hydrogen and its storage requires the continuous development of new materials. "Negative CO_2 emissions" will be a topic in the transition period up to decarbonization and will involve deep carbon capture, as well as newer approaches such as enhanced weathering of mafic rock. The development of disposal sites for high-level nuclear waste has barely been achieved by any country and requires materials scientists to develop the "technical barrier", and a knowledge of mineralogy and geochemistry for the "geological barrier" in deep underground structures. And finally, our expertise is needed to not only find and manage the mineral nutrients, such as phosphorous, required to feed 8 billion people, but also the micronutrients of iron and zinc: these need to be found and applied to agricultural plots in forms that are not wasteful.

The areas of scientific endeavour listed above are by no means exclusive. But they do serve to illustrate the outstanding role that the mineralogical and geochemical sciences play in fundamental science and that they should play in safeguarding the future of this planet and our societies. It is a role that is in demand, both by young people concerned by their future and by society in general. It is a role we should take on and also make known to others that our own sciences are ready for the task. The scientific societies, and, thus, also their presidents, should be seen as active players in this role.

DMG Awards

The Paul Ramdohr Award was given to the two best undergraduate or graduate student presentations at the annual DMG meeting. Let me congratulate Jonas Kaltenbach from Karlsruhe and Bjarne Friedrichs from Heidelberg for their outstanding poster presentations at last year's all-digital poster meeting.

Please nominate your best colleagues for the 2021 awards:

- The Abraham Gottlob Werner Medal in Gold for services towards the advancement of mineralogical sciences; the Abraham Gottlob Werner Medal in Silver for outstanding scientific achievements.
- The Agricola Medal for outstanding scientific achievements in applied mineralogy.
- The Victor Moritz Goldschmidt Prize for scientists over 38 years old for particularly important findings that were made in the past five years.
- Suggestions for honorary members.
- The Beate Mocek Prize. Encourage young female scientists to apply for this prize for excellence in a master's or doctoral thesis (by June 30).

Nomination procedures can be found here: https://www.dmg-home.org/dmg-home/ehrungen-/-preise/.

DMG Meetings

The DMG meeting of 2020 was held as a very successful virtual poster meeting. Some 71 posters were on display, all of very high quality, and mostly from early career scientists.

The 2021 annual meeting will be held online 29 August–2 September 2021 jointly with emc^{2020} in Cracow (Poland).

The 2022 annual meeting will be held 11–15 September 2022 jointly with the DGGV in Köln (Germany). This meeting will be the one-hundredth DMG meeting.

I wish you a scientifically inspiring and – importantly – healthy year 2021, and I hope to meet you soon!

Yours,
Friedhelm von Blanckenburg

PROFESSOR KLAUS KEIL APPOINTED HONORARY MEMBER OF THE GERMAN MINERALOGICAL SOCIETY

Klaus Keil was born in Hamburg (Germany) in 1934. He grew up in Jena (Germany) where he studied mineralogy and chemistry at the local Friedrich Schiller University. Early on, Fritz Heide, one of his teachers, got him interested in meteorites and convinced him to begin a dissertation in meteoritics. Hans Suess (1909–1993), who was working in La Jolla (at the University of California, San Diego, USA) at the time, learned about the work Klaus Keil was doing in Jena and tried to convince him to come to La Jolla. As a result, Klaus Keil left East Germany, shortly before the Berlin Wall was built. He immediately travelled to the Max-Planck-Institute for Chemistry in Mainz, where he completed the research for his dissertation and was awarded his doctoral degree. He then moved to La Jolla and later took positions at NASA's Ames Research Center at Moffett Field (California, USA). In 1968, he was appointed Director of the Institute for Meteoritics and Professor of Geology and Geophysics at the University of New Mexico (USA). In 1990, he became Director of the Planetary Geosciences Division at the Hawaii Institute of Geophysics and Planetology (USA). He retired in 2012 from university life but remains active and is still doing research.

Klaus Keil is a pioneer in the application of the electron microprobe to meteorites. Together with Kurt Fredriksson, he was the first to quantitatively determine the compositions of minerals in meteorites. Their results on olivine and pyroxene compositions in ordinary chondrites confirmed the differences in bulk chemistry among chondritic meteorites that had been determined earlier in 1953 by Harold Urey and Harmon Craig. Klaus Keil and Kurt Fredriksson also detected LL chondrites as a new group of ordinary chondrites. The carefully done analyses by Klaus Keil and Kurt Fredriksson are still valid. Later, Klaus Keil became interested in the strongly reduced enstatite chondrites. Using the electron microscope, he and his co-workers detected a series of new minerals in these meteorites, such as sinoite, ninigerite, heidite, and others. A sulfide carries his name: keilite $(Fe^{2+},Mg)S$.

After having become Director of the Institute for Meteoritics in 1968, Klaus Keil established one of the most influential research groups in cosmochemistry with Marty Prinz, Jeff Taylor, Ed Scott, Hort Newsom, Adrian Brearley, Rhian Jones, and others. During the Apollo program, Klaus Keil and his group participated in the study of lunar rocks. Their focus was on the highland rocks. Klaus Keil created the acronym ANT for a variety of interrelated rock types, but dominantly anorthosite, norite, and troctolite. He was principal investigator of lunar rocks for many years and was also very active as a member of several NASA advisory boards and committees.

At the same time, Klaus Keil's research group did groundbreaking research on meteorites. They published key papers on the chemistry and petrology of chondrules. Later, Klaus Keil focused on silicate inclusions in iron meteorites and worked on shock features in meteorites. In Hawaii, Klaus Keil and the volcanologist Lionel Wilson developed a concept for the early history of planetesimals. They postulated formation, ascent, and loss of early gas-saturated partial melts in small planetesimals in order to explain the residual character of some differentiated meteorites.

In 1988, Klaus Keil was awarded the Leonard Medal of the Meteoritical Society and, in 2014, he was recipient of the Abraham Gottlob Werner Medal in Silver, the highest award of the German Mineralogical Society.

Despite being officially retired, Klaus Keil still does research on meteorites at the Hawaii Institute of Geophysics and Planetology, and he is editor of the journal *Geochemistry* (formerly *Chemie der Erde*).

The German Mineralogical Society awards this great scientist with an Honorary Membership in recognition of his major scientific achievements related to the study of meteorites and their components.

Herbert Palme, Frankfurt; **Klaus Mezger**, Bern; **Astrid Holzheid**, Kiel

DMG AWARDS TO YOUNG SCIENTISTS IN 2020

With the **Victor Moritz Goldschmidt Prize**, the German Mineralogical Society honors young scientists for particularly important research from the previous five-year period. In 2020, a prizewinner was found in **Dr Mathias Burisch-Hassel**, who is distinguished by his unusual creativity and the consistently outstanding intellectual quality of his work. After an apprenticeship as a cook, he decided to study mineralogy at the Albert Ludwigs University of Freiburg. From there, he moved to the Eberhard Karls University of Tübingen for his doctoral research in 2013. It was during this time that he commenced research into the origin of ore deposits. His doctoral thesis focused on the genesis of silver–cobalt–nickel–arsenic veins in the Odenwald area of central western Germany, focusing on the systemic analysis of the genesis of this style of mineralization. Important results included the realization that so-called "five element vein deposits" are formed by metal reduction with methane and that the interaction of aqueous fluids with gneisses, granites, and sandstones can actually produce ore-forming fluids. This has been shown quantitatively for the first time for different salinities, mineral grain sizes, temperatures, and rock types; this process of metal enrichment in aqueous hydrothermal fluids can be identified as a key prerequisite for the genesis of many types of hydrothermal ore deposit.

Immediately after completing his dissertation, Dr Burisch-Hassel moved to the Technische Universität Bergakademie Freiberg in 2016, where he currently holds the position of assistant professor in the unit for Economic Geology and Petrology and was quickly able to secure an EU-funded junior research group. This "Mineral Systems Analysis" group consists of four PhD students, supplemented by a large number of MSc and BSc students. Under the supervision of Dr Burisch-Hassel, the group is working on a thoroughly revised and scientifically sound model for the genesis of magmatic-hydrothermal deposits in the Erzgebirge (Germany). Within the last two years, the group has been able to generate a large body of surprising results. Key aspects are the definition of different groups of skarn deposits in the Erzgebirge, which systematically differ in age and composition, as well as the unequivocal association of the rich silver ore deposits of the Freiberg district with the group of epithermal magmatic-hydrothermal systems. The relevance of these results for exploration is underpinned by close and trusted cooperation with all the relevant exploration companies in the region. Essential for this success is the fact that Dr Burisch-Hassel, despite his young age, has the full range of skills needed to work successfully in the field of mineralogy, petrology, and ore deposit research. Because of his outstanding performance and future potential, Dr Burisch-Hassel is a worthy recipient of the Viktor Moritz Goldschmidt Prize of the DMG.

Gregor Markl, Eberhard Karls University of Tübingen and
Jens Gutzmer, Helmholtz Institute Freiberg for Resource Technology (HIF)

Marina Veter

In memory of the late petrologist and geochemist Beate Mocek, the **Beate Mocek Prize** of the German Mineralogical Society was created by her family to encourage female young scientists in the areas of petrology and geochemistry. This year's prize is awarded to **Marina Veter** (Macquarie University, Sydney, Australia) to support her research project entitled "Geochemical Characterisation of Trace and Ultra-Trace Elements in Mantle-forming Silicate Phases Olivine, Orthopyroxene and Clinopyroxene as Petrogenetic Indicators for Mantle Processes".