German Mineralogical Society

www.dmg-home.org

FROM THE PRESIDENT

Dear friends and members of the DMG,

Reinhard Fischer

This year has been heavily influenced by the restrictions caused by the COVID-19 virus. Our March 2020 meeting of the DMG board had to be canceled, and all discussions and decisions had to be made in virtual space. We have been spending most of our time in our home offices, longing for field work or to perform experiments in our labs. Nevertheless, the board members of the DMG have had a busy time in 2020. It was the transition of the *European Journal of Mineralogy* (*EJM*) going open access and moving from our former publisher, Schweizerbart, to our new publisher, Copernicus. Access to the *EMJ* back catalogue before 2020 also had to be organized and the contracts with GeoScienceWorld (GSW) set up. We thank Andreas Nägele from Schweizerbart for all his efforts in promoting the *EJM* since its foundation in 1989 and for his continuous support for our society, especially as our bursar.

A special focus of our society is on the promotion of young researchers. This was a central topic at our fall meeting of the DMG board, which was organized as a hybrid meeting in the physics centre of Bad Honnef and that incorporated online participation, directly followed by our general assembly, again as an online meeting. Prior to the meeting, Klaus Keil (University of Hawaii, USA), who is a pioneer of meteorite research, was appointed, via an online vote, as an honorary member of the DMG for his outstanding scientific work. With deep sadness I have to report the passing of Ekkehart Tillmanns (Vienna). He died on 30 December 2020, shortly after he received the Abraham-Gottlob-Werner medal of the DMG and just before he could celebrate his 80th birthday on 29 January 2021. He will be in our memories as a great mineralogist and crystallographer. The Victor Moritz Goldschmidt Prize for early career scientists was given to Mathias Burisch-Hassel from Freiberg (Germany) for his outstanding research on the mineralogy and geochemistry of ore deposits, notably from the Erzgebirge and Schwarzwald areas. Marina Veter from Sydney (Australia) won the Beate Mocek Prize for young female scientists: this will support her PhD research project entitled, "Geochemical characterization of trace and ultra-trace elements in mantle-forming silicate phases olivine, orthopyroxene and clinopyroxene as petrogenetic indicators for mantle processes."

Because of the cancellation of the European Mineralogical Meeting (emc^{2020}) in Krakow (Poland), we organized an online poster session on our DMG website from 30 November 2020 to 3 December 2020. Many thanks to Stephan Buhre (Mainz) and Lennart Fischer (Freiburg) for the technical realization and overall organization.

With the end of 2020, my term as president of the DMG will terminate. It was a formidable and fascinating task to serve the community for two years. I am especially grateful to our treasurer, Gerhard Franz, and our secretary, Klaus-Dieter Grevel, for their support during this period. I also thank all members of our board for the effective collaboration, and, finally, all members of the DMG for their support. It is my great pleasure to introduce Friedhelm von Blanckenburg as my successor in this office. He is the head of Earth Surface Geochemistry at the German Research Centre for Geosciences (GFZ) in Potsdam and is well-known as a former editor of *Elements*. I am confident that he will lead our society into the future, especially within the network of other geoscientific societies.

I say goodbye as president, but I will definitely see most of you at one of our future meetings. This could be in Krakow in 2021 (emc^{2020}); in Cologne in 2022 (to celebrate the 100th anniversary of DMG meetings); or in 2023, either in Vienna (at a joint meeting with the Österreichische Mineralogische Gesellschaft) or in Berlin to celebrate the 175th anniversary of the German Geological Society (Deutsche Geologische Gesellschaft - Geologische Vereinigung, or DGGV for short).

All the best,

Reinhard Fischer (DMG President)

CRYSTALLOGRAPHY AND APPLIED MINERALOGY – ONLINE WORKSHOP 2021

The next joint workshop of DMG's Crystallography and Applied Mineralogy sections will take place 25–26 February 2021 as an online meeting. Nevertheless, and as always, the major aim of this workshop will be to bring students in contact with experienced scientists in order to discuss the students' recent and future scientific work. For further information contact christiane.stephan-scherb@bam.de.

FINAL DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE IN EUROPE: PUBLIC PARTICIPATION AND GEOLOGICAL EXPERTISE ARE KEY TO SUCCESS

On 9 September 2020, the German umbrella association for the geosciences, the Dachverband Geowissenschaften (DVGeo), invited stakeholders from politics, business and science to its symposium on the final disposal of high-level radioactive waste in Europe. Due to the current pandemic situation, DVGeo decided to organise an online event. This had a positive effect on the group of participants: almost 250 registrations were recorded, including attendees from Switzerland, France, Austria, Hungary and Australia.

Sylvia Kotting-Uhl (Chairwoman of the Committee on Environment, Climate and Nuclear Safety in the German Bundestag) introduced the symposium by pointing out the experience in site selection, planning and communication which has been incorporated into the processes in Switzerland, Sweden and Finland. All three countries are already much further ahead than Germany in their search for a site for high-level radioactive waste.

In Switzerland, the search for a repository for low- and intermediate-level waste, and another for high-level waste, started in 2008. As Prof. Meinert Rahn (of the Eidgenössisches Nuklearsicherheitsinspektorat, or ENSI) pointed out, the country has examined 27 different possible sites. The Opalinus Clay, a common rock in northern Switzerland, turned out to be the most suitable. The plan and the method, on which the selection is based, also contains participatory elements in Switzerland: public participation is offered, but was less popular. There are no knock-out criteria in the site selection process: rather, the overall performance of an area is important for the final decision. In 2022, Nagra (the Swiss-based National Cooperative for the Disposal of Radioactive Waste), which is responsible for the repository project in Switzerland, intends to announce the sites.

In Sweden, energy companies founded the SKB (the Swedish Nuclear Fuel and Waste Management Company) in order to manage and store radioactive waste. In addition to feasibility, Sweden also relies on voluntary actions. Peter Wikberg of SKB reported that of the 284 Swedish municipalities, almost half were willing to participate in a study to determine the impact of a repository on the municipality. The feasibility studies showed that 8 of these municipalities would, in principle, be suitable. In the end, two locations were examined more intensively with regard to the long-term safety of a repository and the effects on the environment and society. Ultimately, the decision for one of the locations was made by consensus.

Posiva, a company founded in 1995 in Finland, has been building a repository for high-level radioactive waste on the Olkiluoto Peninsula on the west coast of Finland since 2004. Low- and medium-level waste has been stored in this granite repository since 1992. The extension to accommodate high-level waste will be completed in 2025. Finland will be the first nation in the world with a high-level waste repository. There, too, communication with the public and seeking acceptance have played a very important role in the process of site selection and siting, as emphasised by Jari Makkonen of Posiva.

Prof. Jan Behrmann, President of DVGeo, concluded the symposium by stating that, in all three countries, the population was always taken along in a long process of finding and accepting a solution. Behrmann hopes that finding a site for a final disposal is seen as a task and a challenge by Germans which takes time but that can, ultimately, lead to success.

The presentations of all three speakers are available on www.dvgeo.org. Here you will also find the link to a video with the key messages of the speakers.

Tamara Fahry-Seelig – Berlin

ONLINE DMG SHORT COURSE: COSMOCHEMISTRY 2020

1st August until 25th September 2020, University of Cologne

Is it possible to teach geosciences online? If so, how?

After conducting the international online DMG short course Cosmochemistry 2020 from PD (Privatdozent) Dr Dominik Hezel, the answer is a resounding "Yes!"

While discussions about the possibilities and benefits of online teaching are ongoing elsewhere, Dominik Hezel and his team successfully realized an online course that worked in terms of its content and its didactic approach.

The course lasted from 1 August to 25 September 2020. A few days prior to the start of the course, the fifteen participants from Germany, Sweden, USA, Brazil, Chile, Switzerland and Great Britain received a general guidance document on the course's structure and procedure. This included a time schedule (Fig. 1) and a link to the online working platform metbase.org, where the majority of the course material was provided.

Twenty-six assignments formed the basis and structure of the course. Every two weeks, the participants should select and solve three to five of them. Submission was possible by e-mail as a written document or by video. The topic titles included "Nucleosynthesis", "Formation of Chondrules", "Chemical Fractionation Trends in Meteorites, Earth, ISM and the Galaxy" and "Mathematical Basics for Isotopes and Dating".

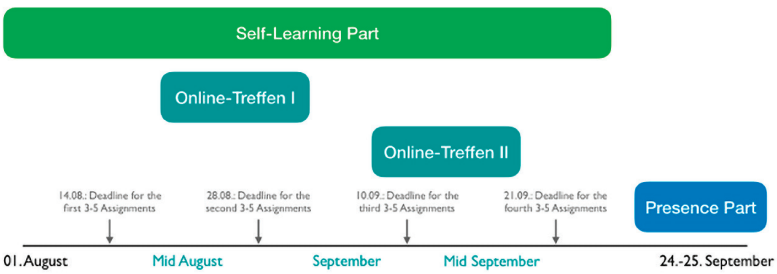

Figure 1 Schedule for the online DMG short course Cosmochemistry 2020. Source: Cosmochemistry course guidelines.

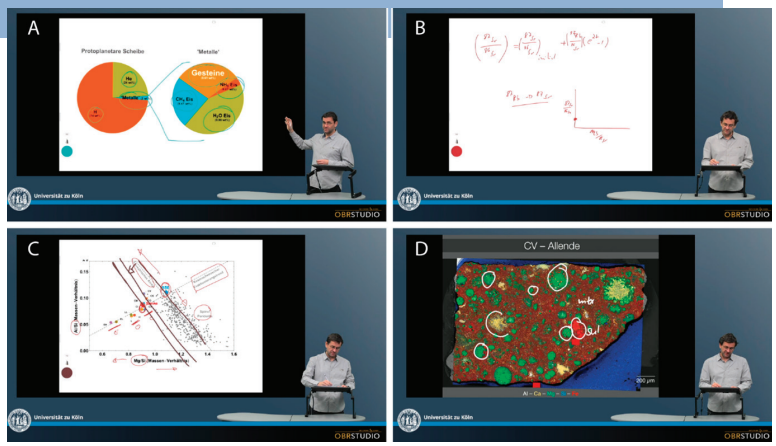

Figure 2 Examples of some teaching videos from the metbase.org platform. (**A**) Initial composition of the protoplanetary disk. (**B**) BABI – The basaltic achondrite best initial Sr ratio. (**C**) Cosmochemical fractionation trends and terrestrial field. (**D**) Miscellaneous chondrites and their components.

The information needed to solve the assignments was provided in short videos (from 2 to 15 minutes duration) on the metbase.org platform. Those were complemented by analytical data, diagrams, graphs, references and short descriptions.

Graphics and diagrams were clearly and comprehensibly illustrated and presented. Notes and small sketches were added for further explanation (Fig. 2).

For every submitted assignment, Dominik Hezel provided detailed written feedback, or sometimes short video sequences. It was also always possible to ask questions, by e-mail or during online meetings.

An important part of the blended learning concept of this course were two virtual meetings. In these meetings, group tasks were solved in separate breakout rooms and later discussed with the entire group. The idea was to summarize what had been learned, identify knowledge gaps and clarify questions of understanding.

The planned two-day in-person phase at the University of Cologne had to be cancelled due to ongoing corona restrictions. Instead, an online block course was arranged, again with the intention to recap and discuss. Furthermore, this allowed the participants to connect and share their research and experiences (even more of this would be welcome next time). Finally, the opportunity was given to take an oral exam and thereby acquire four European Credit Transfer System credits.

Conclusion

Online teaching is possible, even in the geosciences! Yet it does require a structural rethink from all participants, especially in terms of teaching preparation. The course offered by Dominik Hezel was a didactically convincing combination of how to gain knowledge from tutorial videos, how to solve assignments independently with detailed and individual feedback, and have in-depth group discussions via online meetings.

Consequently, this poses a real alternative to conventional presence teaching.

In addition, travel costs are saved and the environmental footprint is reduced. Moreover, it is possible to offer a course internationally, thereby giving participants the opportunity to connect and network on a global scale.

We would like to thank Dominik Hezel on behalf of all participants for this very interesting, fruitful and enriching course.

Steven Zierold (TU-Bergakademie Freiberg)
Lisa Maria Eckart (Freie Universität Berlin)
Mathis Warlo (Luleå University of Technology)