



# European Mineralogical Union

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## EMU RESEARCH EXCELLENCE MEDAL

One of the means by which the European Mineralogical Union (EMU) fosters and encourages research in the mineralogical sciences is to present a silver medal each year. The EMU Research Excellence Medal is presented to early career scientists (no more than 15 years since completing their PhD<sup>1</sup>) who have made significant contributions to research and who are active in strengthening European scientific links. The medal is presented at an awards ceremony during an international meeting, such as the Goldschmidt meeting or a combined meeting of EMU member societies.

The EMU Medal Committee calls upon the member societies and all European mineralogists for nominations; the next deadline is 1 June 2020. The nomination process is quite straightforward and requires only a cover page (available at <http://eurominunion.org/wp-content/uploads/2016/12/cover-page-EMU-award.pdf>); a cover letter from the nominator outlining the candidate's qualifications in light of the two criteria for the award; supporting letters from at least two, but no more than four, co-sponsors; a complete candidate CV that includes a full publication list. Nomination packages for 2020 should be sent to the Chair of the Medal Committee, Dr Clare Warren: [clare.warren@open.ac.uk](mailto:clare.warren@open.ac.uk) by midnight (GMT) on 1 June 2020.

All members of EMU societies are encouraged to consider nominating suitable candidates from among their colleagues, thereby recognising their outstanding scientific contributions to the mineralogical sciences (in the broadest sense).

Please feel free to contact the President of EMU, Michael Carpenter (e-mail: [mc43@esc.cam.ac.uk](mailto:mc43@esc.cam.ac.uk)), with questions or suggestions about the EMU Research Excellence Medal.

## A New Initiative: Research Excellence Medal Lecture

As a new initiative, the EMU is supporting visits of this year's winner of the Research Excellence Medal, Dr Katharina Marquardt, to two or three European institutions to present her medal lecture. Dr Marquardt received her award at the Goldschmidt meeting in Barcelona (Spain) and her lecture was, "Olivine Interface Distributions in Static and Dynamic Equilibrium: Effects of Diffusion vs Effects of Dislocation Motion".

Anyone who is interested in having a visit by the current (or future) medallist to their institution should contact the Secretary of EMU, Dr Juraj Majzlan (e-mail: [Juraj.Majzlan@uni-jena.de](mailto:Juraj.Majzlan@uni-jena.de)), with a proposal of when and where Dr Marquardt would give her lecture. Dr Majzlan will decide on the most suitable requests, to fit in also with Dr Marquardt's schedule.

This is what Dr Katharina Marquardt of Imperial College London (UK) says about her scientific activity:

"I am a mineralogist, Earth scientist and materials scientist working at the intersection of these fields since my doctorate in 2010. After spending several years as a researcher in Earth science departments, I recently moved to the Department of Materials at Imperial College London where I especially enjoy my work on how interfaces influence bulk material properties. I profit from Imperial's state-of-the-art analytical facilities and the collaborative enjoyable environment I personally require for research. Generally, my work is very interdisciplinary and spans over various disciplines, including geochemistry [Schmidt et al. 2014; Keim et al. 2018], geophysics, materials science [Marquardt et al. 2015, 2017], and includes molecular dynamic modelling [Adjaoud et



Dr Katharina Marquardt receiving the EMU Research Excellence Medal for 2019 from Prof. Michael Carpenter at the Goldschmidt Meeting in Barcelona (Spain).

al. 2012; Wagner et al. 2016] and numerical modeling [Marquardt et al. 2010, 2011; Gardés et al. 2012]. I recently received the prestigious EMU Research Excellence Medal 2018 for my 'challenging and forefront (research) projects' and for my 'contributions that have opened up new horizons'. Hurray!

I teach both electron microscopy (PhD course) and a course on microstructure in 2nd year material science degree. I think that both are so little used or considered in geology, but I think current research is turning more and more towards the study of microstructure and realizing the importance of grain boundaries. Therefore, I consider my most important work to be "The Most Frequent Interfaces in Olivine Aggregates: The GBCD and Its Importance for Grain Boundary Related Processes" (Contributions to Mineralogy and Petrology, 2015, v170: 40.) [GBCD = grain boundary character distribution]. In this work, we precisely describe the state-of-the-art stereological grain boundary plane distribution reconstruction used to understand grain boundary network geometries in rocks. In other words, you may think of this as either an average crystal shape or an average grain boundary network geometry. My study was the first of its kind on natural samples as well as the first on mantle rocks. I know that this work can eventually lead to a greater understanding of grain size evolution (e.g., mantle viscosity) and melt percolation and extraction (geochemical cycles etc) in the Earth's interior. I hope it will do so!

With respect to my views on science in general and its big mistakes you may see: <http://blog.eag.eu.com/general/restructuring-the-tenure-process-reproducibility-in-science-and-tackling-climate-change-by-example-an-interview-with-dr-katharina-marquardt/>.

## REFERENCES

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<sup>1</sup> Periods of time away from research, for example due to part-time working patterns, parental leave, caring responsibilities, health issues, will be taken into account in the consideration of "time-since PhD" eligibility.

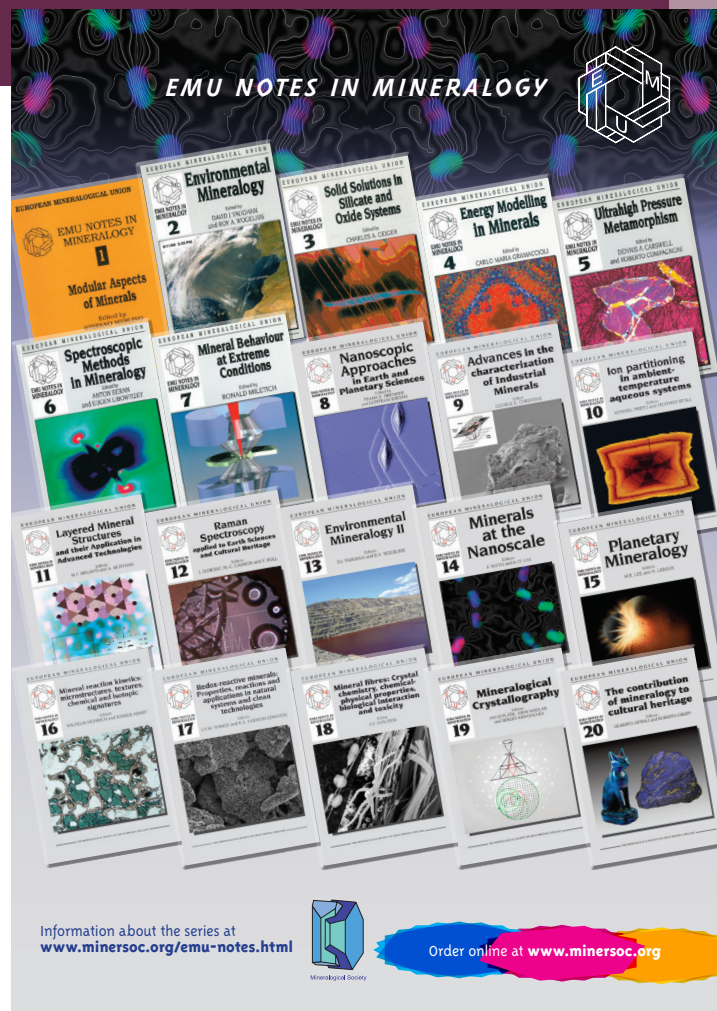
## 2<sup>nd</sup> EMU SCHOOL ON MINERAL FIBRES

Following the success of the 1<sup>st</sup> EMU School on Mineral Fibres, which was held in June 2017, the European Mineralogical Union organized the 2<sup>nd</sup> EMU School on Mineral Fibres (2019 EMU school) 9–13 September 2019 in Casale Monferrato (Italy). The 2019 school focused on natural occurring asbestos (NOA) from a range of viewpoints, from the geological to the medical, and covered many multi-disciplinary aspects. The chairs of the school, Prof. Alessandro F. Gualtieri (University of Modena e Reggio Emilia, Italy) and Dr Ruggero Vigliaturo (University of Pennsylvania, USA), welcomed 80 delegates from various parts of the world, including Australia and the USA. The school officially opened on 9<sup>th</sup> September, and, over the 5 days, students attended lectures delivered by 23 keynote speakers. Specific topics included the following: crystal chemistry and the occurrence of mineral fibres and NOA; definitions of “asbestos”, “fibre” and related terms; the genesis of NOA; identifying and classifying mineral fibres; geological assessment and field sampling methods for NOA in rocks and soils; experimental methods for investigating mineral fibres; surface and bio-chemical properties of mineral fibres; protection of workers and the public from potential NOA exposure; asbestos-related diseases and bio-chemical mechanisms that induce adverse effects in the human body; in vitro and in vivo tests to assess cyto/genotoxicity and carcinogenicity of mineral fibres; epidemiological studies of asbestos-related diseases and genetic factors. All presentations were very well received and enjoyed by the delegates. The roundtable discussion on Tuesday, 10 September allowed students and citizens to share information, ask questions to speakers, and take part to scientific discussions moderated by the chairs.



Delegates and speakers at the 2<sup>nd</sup> EMU School on Mineral Fibres.

The content of the talks varied from specialist topics, such as the application of scanning electron microscopy and transmission electron microscopy to NOA investigations [e.g., the talk by Dr Jasmine Petriglieri on asbestiform antigorite from New Caledonia and the talk by Dr Mark Bailey on fibrous glaucophane in the blueschists of California (USA)], to multi-disciplinary talks during which various aspects of mineral fibre characteristics were linked to health aspects. The talks by Prof. Elena Belluso, Dr Martin Harper and Prof. Alessandro Gualtieri showed that although the world of mineral fibres has been studied for many years, there are no generally accepted definitions of “asbestos” or “fibre”, and there are still controversies about which mineral particles should be classified as “asbestos”. Prof. Gualtieri also presented an innovative model to predict the toxicity of mineral fibres. Drs Ileana Pérez-Rodríguez and Jessica K. E. Choi gave fascinating talks on microbe–mineral interactions. The talk by Dr Daniele Mandrioli on asbestos pathogenicity mechanisms and in vivo tests was well received by all, but especially from those who study mineral fibres from a purely biological and medical point of view. Thanks to Dr Ruggero Vigliaturo, Dr Mark Bailey and Prof. Giancarlo Della Ventura, students gained information about the recent advances in transmission electron microscope and spectroscopy technologies as relevant to the study of mineral fibres. A final highlight was Dr Francesco Turci who gave us great insight into how the surface activity of mineral fibres contributes to their toxicity and pathogenicity.



Information about the series at  
[www.minersoc.org/emu-notes.html](http://www.minersoc.org/emu-notes.html)



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“Ghost in the mine”. A special field trip to the reclaimed chrysotile mine at Balangero (Italy).

The social events were highly appreciated, especially the visit to the Eternot Park in Casale Monferrato and the field trip to the Balangero chrysotile mine. The tour guide of the city of Torino gave some background on the history of the first capital of Italy and the city that inspired the “Liberty” style and on Italian artists of the late 800s. The silver service dinner at the Filarmonica (dinner held in a historic building, decorated with fascinating mural frescoes) was an equally memorable experience. None of the social events would have been possible without the fantastic support from our sponsors, to whom the Organizational Committee are extremely grateful. The last day ended with a Farewell Reception at Casale Monferrato Castle, led by the Rotaract Club Casale Monferrato. As happened at the first edition of the school in Modena, there was a friendly atmosphere in Casale that promoted valuable interactions between the students and the lecturers. Additional information on the 2019 EMU school is available on the website [emu2019.unimore.it](http://emu2019.unimore.it).