European Association of Geochemistry

CHANGES IN THE EAG COUNCIL

The European Association of Geochemistry (EAG) members elected three new councillors in the autumn 2021 elections. The new councillors will each serve for three years.

Lena Alakangas is a professor of applied geochemistry at the Department of Social, Environmental and Natural Resource Engineering at Luleå University of Technology (Sweden). She is an environmental geochemist with research that focuses on the understanding of geochemical processes in natural environments and in environments that have been affected by human activities such as mining. Her research also includes evaluation and development of preventive methods to reduce environmental impact. She is currently the head of the research subject Applied Geochemistry, which includes research in analytical chemistry, isotope geochemistry, and environmental forensics to trace the source of pollutants and geochemical processes. She works closely with the extractive industry and infrastructure companies.

Ernest Chi Fru is a geomicrobiologist/biogeochemist interested in the biogeochemical evolution of the geobiosphere through Earth history. He was born in anglophone Cameroon and later moved to Sweden where he earned a PhD in geomicrobiology at Gothenburg University in 2006. Subsequent postdoctoral stints took Ernest to the University of East Anglia (UK), Newcastle University (UK), and the University of Windsor (Canada). In 2011, Ernest took up an Intra-European Marie Curie Fellowship position at the Swedish Museum of Natural History (Stockholm). He later relocated to Stockholm University with an European Research Council starting grant in 2013. Since 2016, Ernest has been a senior lecturer in geomicrobiology/biogeochemistry in the School of Earth and Environmental Sciences at Cardiff University (UK).

Johanna Marin-Carbonne is an assistant professor in stable isotope geochemistry at the University of Lausanne (Switzerland). Her research interests rely on better constraining the environmental conditions of the early Earth—especially the redox conditions—as well as the link between the environmental conditions and the evolution of microbial life. Her research uses the high spatial resolution methods of stable isotope geochemistry associated with mineralogical and petrographic tools to better understand what kind of metabolic biosignatures can be preserved in the geological rock record.

The EAG Council has also elected former EAG councillor **Kate Kiseeva** to serve as Secretary for a term of three years.

Kate Kiseeva is a lecturer in geochemistry at the University College Cork (Ireland). Her research interests focus on two topics: the behaviour of chalcophile elements in mantle processes and during the Earth's accretion and differentiation, and high-pressure mantle geochemistry, metasomatism in the cratonic mantle, and upper- and lower-mantle inclusions in diamonds.

We would also like to take this opportunity to thank departing councillor **Alberto Vitale Brovarone** and secretary **Mihály Pósfai** and for their important contributions to the growth and success of the EAG during their respective terms.

2022 EAG COUNCIL

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Derek Vance (ETH Zürich, Switzerland)

VICE-PRESIDENT
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Ernest Chi Fru (Cardiff University, UK)

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Nadia Malaspina (University of Milano-Bicocca, Italy)

Johanna Marin-Carbonne (University of Lausanne, Switzerland)

Olivier Namur (University of Leuven, Belgium)

Carmen Sanchez-Valle (University of Münster, Germany)

Jill Sutton (University of Brest, France)

EAG CO-SPONSORED EVENTS IN 2022

We are pleased to announce that two events will be co-sponsored as part of the 2022 **EAG Short Course and Conference Sponsorship Program.** See https://www.eag.eu.com/outreach/event-sponsorship/ for more information.

- **12th International Symposium Geochemistry of the Earth's Surface**
  Zurich, Switzerland; 24–29 July.
  http://ges12.com/

- **Forming and Exploring Habitable Worlds**
  Edinburgh, UK, and online; 7–13 November.
  https://www.habitableworlds.co.uk/

2022 EAG AWARDS

We are pleased to announce the three recipients of the 2022 European Association of Geochemistry awards. The medallists will present their award lectures at the Goldschmidt2022 conference in July.

H.C. Urey Award to William White

The recipient of the 2022 H. C. Urey Award is William 'Bill' White (Cornell University, New York, USA). White is a pioneer who shaped our understanding of chemical geodynamics of the deep Earth. He has made several fundamental contributions in many areas of geochemistry, but especially to our understanding of the geochemical architecture of the mantle, the nature of crustal recycling into the mantle, and the evolution of the mantle-crust system. White is also well known for authoring the two most widely used textbooks on geochemistry and isotope geochemistry. Through the generous sharing of his ideas, his influence goes far beyond his publications and permeates all of geochemistry and Earth science.

Heinz Lowenstam Science Innovation Award to Lenny Winkel

The recipient of the 2022 Science Innovation Award, named in honour of Heinz Lowenstam for his work in biogeochemistry, is Lenny Winkel (ETH Zürich, Switzerland). Winkel has made major contributions to the understanding of selenium occurrence in soils and arsenic occurrence in groundwater. She integrates global-scale mapping and data analysis based on chemical modelling and machine learning with geochemical experimentation based on molecular-scale interrogation of biogeochemical processes.

F.G. Houtermans Award to Raffaella Demichelis

The recipient of the 2022 F. G. Houtermans Award is Raffaella Demichelis (Curtin University, Australia), who is recognized for her important contributions to fundamental geochemistry by applying both ab initio quantum mechanical techniques and force-field based molecular dynamics to understanding the nucleation and surface geochemistry of biominerals, such as calcium carbonate and calcium phosphate. Demichelis has emerged as a world leader in the application of computational methods to such challenging problems.

SIX QUESTIONS TO ANDY RIDGWELL

Dr. Andy Ridgwell (University of California, Riverside) writes computer models – numerical representations of the primary interactions of climate with atmospheric CO_2, including the cycling of carbon, oxygen, and nutrients between land, ocean, and marine sediments. He applies these models to diverse questions, ranging from geological episodes of extreme glaciation and warming, and global-scale ocean anoxia, through understanding global biogeochemical cycling in the modern Earth system, to quantifying future marine impacts of fossil fuel CO_2 emissions and the effectiveness (or otherwise) of geoengineering. His current interests revolve around simulating the co-evolution of marine plankton and their environment, and their ecological sensitivities to past climate perturbations and global environmental catastrophe. He never sets foot in the lab.

1. What or who inspired you to become a geochemist?

Assuming that you can even call me a card-carrying 'geochemist' ;)

My inspirations go back to James Lovelock and Andrew Watson (the latter being my PhD thesis advisor) and the concept of 'planetary homeostasis', which was originally framed in terms of physical climate and surface albedo (in fact, 'Daisy World' was my very first computer program/model). However, the primary importance of greenhouse gases in climate regulation quickly leads you down the rabbit hole of aqueous carbonate chemistry, trace metal speciation and cycles, isotope systems and … worse … In summary: understanding what makes the system 'tick' in its messy totality inspired me.

2. How do you think the field has changed since you were a student?

In a sense it was easier to build a model of the Earth system when we understood only the very basics of marine biogeochemical cycling (co-limitation of marine productivity by dissolved iron was a 'new' thing at the time). It was also possible to have and read *all* of the relevant literature! Conversely, you had to try much harder to devise meaningful process representations in models, be creative in making use of sparse data, and somehow pull the numerical rabbit out of the hat of no data whatsoever.

3. Which career choices were the most important?

Given that my first degree steered off in an unfortunate solid state (mineral) physics direction; taking a Masters degree (Environmental Science, University of Nottingham, UK) was critical to reorient my qualifications. This proved to be a great tour through … (trying to cast my mind back to the mid-1990s – a time even before COVID) … air and water pollution and geochemistry, plant physiology and soil structure, and of particular use: numerical methods and programming (although I had previously spent time whilst unemployed, teaching myself to code).

4. What has been your greatest obstacle?

Non-parallelized computer code? I guess you mean … e.g. finding myself stuck with a poor grade in a less-than irrelevant first degree (see above).

5. What inspires or motivates you?

Cats and elegant computer code?

I guess you mean … understanding how the Earth system 'works'. I attempt this through constructing with computer models and develop learning and insights – treating them as games and 'playing' – exploring scenarios, testing sensitivity to parameters or perturbations, asking 'what if' questions of the model. Even doing real work (specific scenarios associated with specific questions) sometimes. These days I find myself particularly driven by questions surrounding biological evolution and extinctions and what the dynamical relationship is between geochemical and ecological changes on Earth through geological time.

I am also inspired by people who have worked hard to create numerical codes and tools for the community and have been so open and generous with their time in providing and supporting these tools (David Archer, and his sediment diagenesis models was an important influence early on; and e.g. the work of Reiner Schlitzer – Ocean Data View has become a foundational tool in marine geochemistry, although for my sins, I prefer to hack things myself in MATLAB).

6. What qualities do you look for in a potential PhD student?

Motivation, independence, numerical and programming skills, and a deep appreciation of how superior cats are to dogs. I see my role as facilitating and encouraging scientific exploration rather than prescribing specific directions and steps.