

## ABOUT THIS ISSUE

Cement and concrete are essential commodities for a steadily growing and urbanizing world population. Availability, affordability, versatility, and durability have made cement and concrete the second most used material by mankind, behind water. However, their production leaves a large environmental footprint in terms of CO<sub>2</sub> emissions (about 8% of all anthropogenic emissions are associated with the production of cement) as well as depletion of mineral and water resources. Making cement and concrete more sustainable and resilient represents a formidable societal challenge that mineralogists and geochemists can help resolve.



This issue looks back into the history of cementitious materials from antiquity to the Portland cements used today. Alternatives to Portland cement are explored and options for sustainable sourcing of raw materials are discussed in local and even extraterrestrial contexts. Moreover, this issue highlights how mineralogy, geochemistry, and petrography can be applied to assess resources, characterize and develop a new generation of cement and concrete, and understand how basic physical and chemical processes occurring at the microscale affect macroscopic material properties.

## CHANGE IS IN THE EARTH: A NEW ERA OF ELEMENTS

### Posner Named Executive Editor



**Pierrette Tremblay**  
2004–2014



**Jodi Rosso**  
2015–2022



**Esther Posner**  
2023–

Dr. **Esther Posner** has been named the new Executive Editor of *Elements*, following brilliant and successful terms by Dr. Jodi Rosso (2015–2022) and Dr. Pierrette Tremblay (2004–2014). Please join us in welcoming Esther, as well as honoring our past Executive Editors, who are largely responsible for the startup and ongoing success of the magazine.

Esther hails from the freshwater shores of Leelanau County, Michigan (USA), but has been a global traveler for decades, including extended residences in Brazil and Germany, the latter of which where she presently resides with her husband and two young daughters. She graduated top of her class in geology from Grand Valley State University (Michigan, USA) in 2010, earned an MS in geosciences from the University of Arizona (USA) in 2012 under the supervision of Profs. Jibamitra Ganguly and Bob Downs, and then headed off to the Bayerisches Geoinstitut (BGI, Universität Bayreuth, Germany) where she completed her PhD in 2017 under the guidance of Profs. Dave Rubie, Dan Frost, and Gerd Steinle-Neumann. Esther remained at BGI as both a post-doc (2017–2018; 2020–2023) and manager of its world-famous multi-anvil laboratory (2017–2018) in between a few maternity leaves. Her research expertise involves experimental and computational geochemistry, transport and structural properties of minerals and melts, and planetary accretion and core formation. She received GSA's Best Student Presentation Award in 2008 and AGU's Rock and Mineral Physics Graduate Research Award in 2018.

But geology isn't Esther's only interest. She is also an award-winning writer and academic editor, performance poet, and musician with a special knack for rhyming and composing lyrics about math and science. With her high levels of enthusiasm, Esther is passionate about effective science communication, outreach, and life-long learning. She began professional academic editing in 2017 and quickly became hooked, editing more 1000 scientific manuscripts in the fields of geoscience, materials science, and engineering since that time. Esther also has a professional background in print journalism and advertising, and has taught a wide variety of courses including Mineralogy Laboratory, Introduction to the Language and Culture of Brazil, SCUBA diving, downhill skiing, and yoga. She even has her own show, "PhD, The

Musical." Esther is certainly a janel of all trades—and has a lot of exciting new ideas in store for *Elements*. She writes, "I am a long-time fan of *Elements* magazine and it is a tremendous honor to serve society and the geoscience community in this capacity!" Welcome, Esther!

### Evonuk Named Deputy Editor



The *Elements* editorial staff is expanding to include a new role of Deputy Editor, serving as copyeditor, webmaster, and database manager. Please join us in welcoming Dr. **Martha Evonuk** to this role. Martha has been working in scientific editing, both independently and as a freelance editor for larger editing companies, since 2012. She conducted post-doctoral research at various institutes, including ETH Zürich in Switzerland, the Bayerisches Geoinstitut in Germany, and the Institut de Recherche en Planétologie and Astrophysique in France, focusing on numerical simulations of the interior of Jovian planets and convection in the Earth's mantle. Under the supervision of Prof. Gary Glatzmaier, Martha obtained her PhD in 2006 in Planetary Science from the University of California, Santa Cruz, USA, where she also studied astrophysics and optics. A graduate of Boston University in Physics and Earth Sciences, she worked as a lab assistant processing marine sediment samples, analyzing satellite images, and preparing rock samples for thin section. Welcome aboard, Martha!

### Chakraborty Named Principal Editor of Mineralogy (2023–2025)



We are thrilled to share that Prof. Dr. **Sumit Chakraborty** has accepted our invitation to join the editorial board of *Elements*. Beginning in August 2023, Sumit will assume the role of Principal Editor of Mineralogy. Sumit is a well-known figure within the geosciences and has played an important leadership role in several international organizations, including the Mineralogical Society of America (MSA) and the Goldschmidt Science Committee, and is currently serving as the President of the Geochemical Society. Sumit is a professor of physical–chemical mineralogy at the Institute for Geology, Mineralogy, and Geophysics at Ruhr University Bochum (Germany), as well as the director of RUBION, the Central Unit for Ion Beams and Radionuclides. Sumit effectively combines experimental, theoretical, and field studies to better understand the timescales and mechanisms of important geochemical and cosmochemical processes. He is particularly well known for his work on diffusion chronometry and geospeedometry, and has graciously coordinated and led MSA/DMG diffusion workshops numerous times since 2012. Welcome to *Elements*, Sumit!

**Richard Harrison, Becky Lange, Janne Blichert-Toft, Martha Evonuk, and Esther Posner**