TWIST AND SHOUT

Trish 'n' Chips at home in Virginia

It seems just yesterday that the first issue of *Elements* appeared in my mailbox at Virginia Tech. The year was 2005, and after much planning, a grand international experiment had begun. Founding editors Rod Ewing, Mike Hochella, Ian Parsons, and Pierrette Tremblay launched a new magazine that was dedicated to the advances and excitement of the mineralogy, petrology, and geochemistry disciplines in the context of the wider Earth sciences. *Elements* has since grown to a print readership of more than 15,000 in 100 countries, in addition to the many thousands of electronic downloads. Many articles in *Elements* are widely cited, and indeed *Elements* articles have garnered a total of 4250 citations so far. With the 50th issue in your hands today, you can celebrate the tremendous success that *Elements* has enjoyed in the Earth science and broader communities.

In recent months, I have been looking at *Elements* from a different perspective as a new principal editor. After three years of dedicated service, Tim Drever has passed the reins to focus his efforts on more riding, umm...I mean writing, in Wyoming high country. We will miss his practical and insightful editorials about the many facets of environmental geochemistry. But stay tuned—we can look forward to another treat when he and his coauthors finish their upcoming book. Yet, Tim's influence continues in this issue of *Elements* through his early collaborations with guest editors Christine Putnis and Encarnación Ruiz-Agudo. They developed the framework for this thematic edition on mineral–water interfaces long before my term began. I thank Tim, Christine, and Encarni for working with me during the transition.

In this issue, Putnis and Ruiz-Agudo bring us a collection of articles that highlight recent advances and continuing challenges in understanding what happens when crystals and disordered geomaterials contact the aqueous solutions of Earth environments. Although the chemical (and physical) complexity of the discontinuity between solid and solution phases is immense, new tools for probing mineral surfaces have allowed significant progress over the last 10–15 years. Methods that include scanning force and interferometric microscopies, synchrotron X-ray methods, and unprecedented computational capabilities have yielded answers to questions that were not possible a few decades ago.

While a general framework for understanding crystal growth and mineral–water interactions is emerging, many pressing questions remain unanswered. More than ever, the well-being of our global society will rely upon monitoring Earth environments and building quantitative models that can predict the responses of complex systems to natural and human perturbations. We have a long way to go to meet these challenges, but new tools and methods are advancing our knowledge. Further development will require precise quantitative knowledge from chemistry, physics, mathematics, and particularly biology, and will require insightful applications of this knowledge by people who are skilled in working and communicating across traditional disciplinary boundaries. Only through an integrated approach will we truly understand our only home—this planet we call Earth.

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Fifty issues strong, this is a great time for *Elements* to look ahead and ask "What's next?" The answer is simple—you. *Elements* is a forum for showcasing developments in fast-moving fields and for defining new directions. For example, the Perspective article by Harrison et al. in this issue is just that; it summarizes 100 mineralogical questions that look ahead to the future of this foundational science. *Elements* is also a great place for educating and inspiring a multidisciplinary readership of young scientists. An informal poll at the recent Montréal Goldschmidt Conference confirms the popularity of *Elements*, particularly among graduate students, and the interest of readers in receiving thematic issues on a wide variety of topics. Suggestions include everything from learning more about oceans and atmospheres, to soils and water and biology, to planets and the Solar System. In particular, there is tremendous interest in knowing more about the underlying processes that produce these diverse environments.

So, there you have it—consider developing a timely idea into a collection of engaging articles that put the excitement of your field into the mailboxes of more than 15,000 science-minded individuals. There has never been a better forum for communicating the frontiers of Earth science to so many.

Congratulations *Elements*, twist and shout!

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