

The Clay Minerals Society

www.clays.org

THE PRESIDENT'S CORNER



The Clay Minerals Society (CMS) was formed in 1962 (http://www.clays.org/contacts_cms_history.html). Over the years, there have been many distinguished scientists who claim CMS as their primary professional organization. Dartmouth Professor Robert C. Reynolds, Jr. (1927–2004) was one of them. His lifetime achievements in the field of mineralogy were recognized by the Mineralogical Society of America, which, in 2000, presented him with its highest award, the Roebling Medal. The character of the CMS has evolved over the years, something that is reflected in the personality of its members and staff. In the 1980s, office manager Patricia Jo Eberl produced a popular paper newsletter that was periodically mailed to members. The newsletter contained photos of annual meetings, cartoons and satire, and, arguably the most interesting, interviews with distinguished scientists. The following are the excerpts from the December 1989 interview with Professor Robert Reynolds, which I think has a significant insight into clay science and the contrast between the natural and materials science sectors (see CMS Presidents Corner in the August 2017 *Elements*).

CMS As a geologist, where do you see clay mineralogy going?

Reynolds I think that we are going to learn more and more about the details of the structure of clays as we get more and more powerful computers. The Rietveld method is an example. The kind of things that used to be done as a whole research project now will be done routinely. I think the day will come when people just zap 'em with NMR, and look for montmorillonitic occupancy, instead of making it a whole PhD thesis. So, we'll learn more and more about the structure.

Learning more and more about the geology of the clays is a slower process, though, because it only comes after you know everything else. You have to know everything about the clay's character before you can begin to correlate it with the geologic story. So, I don't really see any big breakthroughs in that end of it in the very near future.

But let me say that if you try to predict anything in any field, it's very risky, because what finally happens depends on accidents that haven't happened yet. Whenever you try to make a prediction, you try to extrapolate instinctively from what you know now, when, in fact, progress comes in step functions that completely invalidate everything you think you know. After the war, the Secretary of War under [US President Harry S.] Truman said that he was against bringing the German scientists into the country to build rockets. He said that nobody's ever going to hit anything with those things. OK? Well, now they land within a couple hundred meters with a 6,000-mile range. Somebody else looked at big computers like the Illiac and said that the day is going to come when they will fit in a small room. That's the trouble with making predictions.

But I think something else is happening, too, that helps us: there is a renaissance in materials science, driven by the economics of metal films, amorphous metals, semiconductors, commercial products that have strange electrical and physical properties. These advances feed back into technology, equipment, and techniques that we can apply to our field. We can help those guys too. You know, superconductors are intercalated compounds. I think that there is a swell of interest in the details of non-perfect crystals.

CMS You are one of the few geologists in the country who teaches clay mineralogy. Do you think the field is growing or dying out?

Reynolds I hope it's not dying out. I think that the oil business is a bellwether for us. When oil prices are low and jobs are scarce, everybody in the clay field feels it. If you look down the pike, the oil industry has to come back. We haven't solved the world's energy problems. [T]here ought to be a place and a need for our skills in the bigger picture of material science.

Douglas K. McCarty (mccardog@gmail.com),
President, The Clay Minerals Society

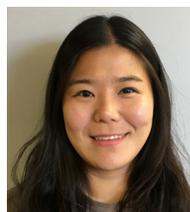
2017 CMS PROFESSIONAL AWARD RECIPIENT SPOTLIGHT



The 2017 CMS Pioneer Award was awarded to **Dr. Fred J. Longstaffe**. Dr. Longstaffe (PhD, PGeol, FRSC) is Distinguished University Professor and Canada Research Chair (Tier 1) in Stable Isotope Science at the University of Western Ontario, where he is a member of the Department of Earth Sciences and Director of the multidisciplinary Laboratory for Stable Isotope Science. He is also cross-appointed to the Departments of Anthropology, Biology and Geography. A graduate of the universities of Windsor (1973) and McMaster (1978), Dr. Longstaffe was a faculty member at the University of Alberta (1978–1987), before joining the University of Western Ontario where, in addition to teaching and research responsibilities, he was founding Chair of the Department of Earth Sciences (1993–1999), Dean of Science (1999–2005), and Provost and Vice-President-Academic (2005–2010), all at Western.

Dr. Longstaffe uses light stable-isotope ratios and mineralogy to understand lithosphere–biosphere–hydrosphere–atmosphere interactions, and is keen on an Earth-system science approach. His work encompasses three main strands. First, the calibration and use of isotopic proxies such as water, clay minerals, organic matter (including *n*-alkanes and amino acids), shelly fauna, and teeth, bones, and hair of fauna and megafauna (both animal and human) in paleoecological, paleoclimatic, and bioarchaeological reconstructions. Second, the application of stable isotopic proxies (porewater, ostracodes, organic matter, diatoms, clay minerals) to the Late Pleistocene and Holocene paleolimnology and glacial and postglacial history of North America's Great Lakes. Third, the investigation of large-scale fluid–rock interaction and alteration in sedimentary basins, including petroleum-bearing systems and other crustal rocks, with an emphasis on clay minerals and other hydrous phases. He is author or coauthor of ~300 refereed publications and has successfully supervised ~100 postdoctoral and graduate students. He was elected to the Royal Society of Canada in 1997 and has received several national and international recognitions for research and teaching over the years.

STUDENT RESEARCH SPOTLIGHT



Congratulations to **Boyoung Song** (Temple University, Philadelphia, USA) for winning a 2018 CMS Student Research Grant! Boyoung Song's research is primarily focused on the interaction between clay minerals and Mn-oxide nanoparticles and on understanding their effects on the distribution of trace elements in various environmental settings. She analyzes surface reactivity of redox-sensitive elements, such as Fe, Ni, and As, including adsorption and oxidation behaviors on mineral surfaces by using spectroscopic methods such as Fourier transform infrared spectroscopy, X-ray photon spectroscopy, and X-ray absorption spectroscopy. Her research goals are twofold: (1) to interpret how clay minerals and metal oxides, both of which are abundant in nature, impact on the geochemical cycles of redox-sensitive elements; (2) to apply the surface reactions between geochemical elements and minerals to the environmental sciences, particularly in relation to remediating contaminated groundwater and soils.

CMS ANNUAL MEETING

CMS Annual Meeting will be held 11–14 June 2018, in Champaign-Urbain, Illinois, USA. Information available on the CMS website www.clays.org.