



Association of Applied Geochemists

www.appliedgeochemists.org

IN MEMORIAM: T. KURTIS KYSER (1951–2017)

The Association of Applied Geochemists (AAG) recently lost one of its most well-known, charismatic, scientific leaders and educators, Professor T. Kurt Kyser (Department of Geological Sciences and Geological Engineering, Queen's University, Kingston, Ontario, Canada). He died 29 August 2017 while co-leading a graduate and undergraduate fieldtrip on carbonates in Bermuda.

Kurt was the Editor-in-Chief of the AAG's journal *Geochemistry: Exploration, Environment, Analysis (GEEA)* for the past few years. Kurt led the journal to a significant increase in impact factor and set up future directions and a structure for *GEEA* that should see it well placed for the next decade. His editorial accomplishments were well-defined through his extensive publication history. Kurt was an author on more than 400 peer-reviewed journal papers, more than 200 refereed conference proceedings, a couple of books and several individual book chapters, along with a host of technical reports and educational notes.

His most prominent research was in the application of isotopes to mineral exploration and environmental geochemistry, with a strong focus on uranium. However, when reviewing Kurt's publications, it is evident that he was hugely influential on a diversity of science disciplines.

Kurt was at the forefront of geochemical isotopic research. He developed and directed the Queen's Facility for Isotope Research (QFIR), a leading geochemistry and isotope laboratory in North America which examines element cycling at the geosphere–biosphere interface. Through QFIR, Kurt initiated many projects that totaled in excess of CAN\$12m.

As an educator, he was active and enthusiastic in teaching courses at the undergraduate, graduate and professional level. Kurt had a strong commit-



Professor T. Kurt Kyser

ment to training the next generation of geochemists, having supervised ~50 MSc and ~50 PhD students, not to mention the many more he influenced as undergrads or as co-supervised postgrads or colleagues. Over the last six years he had directly supervised 15 undergraduate theses, 26 MSc theses, 17 PhD theses and 10 Post-doctoral researchers. Through these undergraduate and graduate student interactions, Kurt had grown and raised a large geochemistry family.

The sheer volume, significance and influence of Kurt's research and teaching ensured he was world renowned and the recipient of many honours. His numerous awards include the Duncan R. Derry Medal, the Hawley Medal, the Willet G. Miller Medal, the Past President's Medal of the Mineralogical Association of Canada, and the Past President's Medal of the Geological Association of Canada. In addition to these honours, he was a Fellow of the Royal Society of Canada, a Queen's Research Chair, a Queen's National Scholar, an NSERC Killam Research Fellow, a Fellow of the Mineralogical Society of America, and a recipient of NSERC's E.W.R. Steacie Memorial Fellowship. For the AAG (in addition to his *GEEA* role), Kurt was a Fellow and the AAG Distinguished Lecturer in 2008–2009.

Kurt was 65 and is survived by his wife and partner in science and life, April Vuletich. He is also survived by a truly incredible number of former students, post-doctoral fellows and research collaborators who are now in all corners of the globe and who will ensure that his legacy of research, education and love for "living-life-large" will continue. As Kurt would have liked, many have raised a glass of red or white in his honour. Cheers to an exceptional life, lived well.

Ryan Noble, Dan Layton-Matthews and Matt Leybourne

RECENT ARTICLES PUBLISHED IN EXPLORE

The following abstracts are for articles that appeared in issue 176 (September 2017) of the *Explore* newsletter. The full articles can be viewed at: <https://www.appliedgeochemists.org/index.php/publications/explore-newsletter>

"Seaweed as an exploration medium along inlets on the west coast of Canada. Part 1: Methods and results from Jervis Inlet"

Colin Dunn¹ and Rick McCaffrey²

Fucus gardneri (rockweed or bladderwrack) is the most common seaweed in the mid-tidal zone of British Columbia, Canada. It can accumulate elements sourced from the many small streams that drain into the fjorded inlets. Forty-seven samples were collected along about 100 km of shoreline, each just seaward from where the streams meet the sea. Samples were dried, milled and analyzed for 65 elements by ICP–MS/ES. One zone yielded enrichments of Ag and As, and another was relatively enriched in Cu, Mo, Ni and Co. High levels of Re at the seaward end of Jervis Inlet probably reflect the relatively saline waters. This study suggests that metal enrichment in seaweed may provide a focus for more detailed follow up into the coastal mountains to look for a mineralized source.

¹ Colin Dunn Consulting Inc., North Saanich, BC;

² Vancouver, BC – formerly of Acme Labs, Vancouver, BC

"Finally, a Correlation Coefficient That Tells the Geochemical Truth"

Robert G. Garrett¹, Clemens Reimann², Karel Hron³, Petra Kynčlová⁴ and Peter Filzmoser⁴

Recent advances in Compositional Data Analysis (CODA) have provided a solution to the Harker diagram problem, where due to the fact that the data sum to a constant, e.g., 100%, the displays make no sense in terms of petrological and mineral stoichiometry knowledge. The article employs the Nockolds data set for major element average compositions of igneous plutonic rocks as the basis for a brief tutorial focusing on the Si–Al, Ca–Na and K–Ti relationships in the data. The transformation of the data pairs into symmetric coordinates permits displays of the element relationships free of the constraints of closure. As a result, Si and Al are seen to increase sympathetically from femic to felsic rocks; Na to decrease with increasing Ca from felsic to femic rocks and in the albite–oligoclase solid solution; and the inverse relationship between K and Ti to become much clearer due to the reduction of the impact of the remaining parts of the composition. The procedure also permits the estimation of correlation coefficients free from the effects of closure. R scripts are provided for the necessary computations and displays, together with the Nockolds data and examples of the use of the R functions.

¹ Emeritus Scientist, Geological Survey of Canada, Natural Resources Canada, 601 Booth St., Ottawa, Ontario, K1A 0E8, Canada

² Geological Survey of Norway, P.O. Box 6315, 7491 Sluppen, Norway

³ Department of Mathematical Analysis and Applications of Mathematics, Palacký University, 17. listopadu 12, 77146 Olomouc, Czech Republic

⁴ Institute of Statistics and Mathematical Methods in Economics, Vienna University of Technology, WiednerHauptstr. 8-10, 1040 Vienna, Austria