International Association of GeoChemistry

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ELSEVIER PHD STUDENT RESEARCH GRANT WINNERS

The International Association of GeoChemistry (IAGC) is happy to announce the recipients of the 2017 Student Research Grants, sponsored by Elsevier and the IAGC. The PhD Student Research Grant program assists geochemistry PhD students to acquire geochemical analyses in support of their dissertation research. Every year, we have many strong research proposals from students from around the world, and every year the awards become even more competitive. This year we allocated more funds so we could distribute five awards. The success of these grantees demonstrates the high caliber of their research. Congratulations to our grantees!

Bryce Mitsunaga (University of California, Los Angeles, USA). "A Reconstruction of Temperature and $\delta^{18}O$ Data since the Last Glacial Maximum using Soil and Gastropods from the Chinese Loess Plateau."

Bryce Mitsunaga graduated from Williams College (Massachusetts, USA) with a BA in geosciences and is currently a PhD student in the department of Earth, Planetary, and Space Sciences at the University of California, Los Angeles. Bryce is exploring several applications of the carbonate "clumped" isotope thermometer: one project involves a reconstruction of central Asian climate during the last ice age using $\delta^{18}O$, $\delta^{13}C$, and multiple heavy-isotope CO_2 data from soil carbonates and fossil terrestrial snail shells. The second project proposes to characterize conditions at the Meso-/Neoproterozoic boundary through analyses of CO_2 and trace metals from billion-year-old Lake Superior stromatolites in North America. He is also studying the systematics of CO_2 isotopologue thermometry through establishing baseline values of artificially reordered minerals. By this, he hopes to better quantify the fractionation that occurs during carbonate dissolution in acid.

Maxence Guillermic (Institut Universitaire Européen de la Mer, France). "Past Evolution of Ocean Carbon Sources and Sinks in Response to Climate Change."

Maxence Guillermic is a PhD student at the Institut Universitaire Européen de la Mer (IUEM, France), with co-advisors at the University of California, Los Angeles (USA) and the University of Cambridge (UK). Maxence is working at the intersection of marine geochemistry and paleoceanography. He reconstructs Cenozoic pH and pCO_2 changes using boron isotopes ($\delta^{11}B$, which is a pH proxy) and trace element analyses (e.g. B/Ca, Mg/Ca) on multiple foraminifera species, and will learn about so-called clumped isotopes (a temperature proxy). The goal of his thesis is to understand the role of past changes in marine carbon sources and sinks during critical climate transitions when there is evidence for changes in atmospheric greenhouse gas levels. Maxence earned an MSc in marine chemistry from IUEM in 2015 in which he characterized the isotopic composition of germanium in seawater.

Suzette Timmerman (Australian National University, Australia). "Diamonds – Time Capsules of Volatiles and the Key to Dynamic Earth Evolution."

Suzette Timmerman earned her BSc in Earth sciences in 2012 and MSc in solid Earth in 2014 at the VU University Amsterdam (Netherlands). She is currently doing her PhD at the Research School of Earth Sciences at the Australian National University (Australia). Her work focuses on the origin and cycling of volatiles in the mantle by studying diamond samples from Brazil, Southern Africa, and Australia. Suzette uses diamond samples with ages ranging from 3.2 Ga to 0.07 Ga to study noble gas compositions in the mantle through time. Noble gas analyses will be complemented by cathodoluminescence imaging, nitrogen content and carbon isotope analyses, major element analyses of mineral/fluid inclusions, and trace element analyses to constrain the growth environment and the diamond-forming fluid. She will also compare lower mantle/transition zone and upper mantle diamonds for their noble gas compositions and will examine eclogitic and peridotitic diamonds to evaluate if noble gases were subducted down into the diamond stability field. This will help to develop a better high-resolution model of the structure of the Earths' mantle and its evolution.

Kirstin Washington (University of Southern California, USA). "Weathering and Climate from the Middle Devonian to the Upper Permian."

Kirstin Washington earned her Bachelors in environmental sciences (2011) and MS in applied geosciences (2012) from the University of Pennsylvania (USA). She is currently a PhD student in the Department of Earth Sciences at the University of Southern California (USA). Her research focusses on understanding past and present chemical weathering processes. She utilizes dissolved δ^7Li ratios of modern river water and hydrothermal fluids to investigate the relationship between low- and high-temperature rock/water interactions. Additionally, she is pairing δ^7Li compositions of ancient carbonates and clumped isotope thermometry to understand the relationship between climate, chemical weathering, and biotic changes over geologic timescales. She measures δ^7Li ratios via multicollector inductively coupled plasma mass spectrometry (MC–ICP–MS) and carbonate clumped isotopes using a specially configured mass spectrometer.

Mabrouk Sami (University of Vienna, Austria). "Rare Metal Granites, Central Eastern Desert, Egypt: Geochemistry and Economic Potentiality Red Sea Mountains, Eastern Desert, Egypt (Nubian Shield in East Africa)."

Mabrouk Sami earned his BSc (Hons) in Earth sciences and MSc in geochemistry/geochemical exploration from Minia University (Egypt). He is currently a PhD student in the Department of Lithospheric Research at the University of Vienna (Austria). He studies the mineralogy, geochemistry and geochronology of rare metal–bearing granitoids in the Central Eastern Desert of Egypt. His work focuses on unravelling the timing and sources of rare metals [such as Nb, Ta, Th, U, Sn and rare-earth elements (REEs)] that become enriched in highly fractionated granitic rocks using whole-rock chemistry (major, trace and REEs), U–Pb zircon and Sr–Nd radiogenic isotopes. The composition of rare metal economic minerals will be determined by electron microprobe analysis and laser ablation inductively coupled plasma mass spectrometry. Mabrouk has already used a combination of these different geochemical methods to understand the petrogenesis and magmatic processes that controlled the formation of certain Egyptian highly fractionated granitoids and their associated rare metal mineralization.