International Association of GeoChemistry

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ELSEVIER / IAGC PHD STUDENT RESEARCH GRANTS

The International Association of GeoChemistry (IAGC) is happy to announce the recipients of the 2021 Student Research Grants, sponsored by Elsevier and the IAGC. This is a very competitive award, with a funding rate of around 10% in 2021. The success of these grantees demonstrates the extremely high caliber of their research. Congratulations to all our grantees! Next year's applications will be accepted starting in October 2021 – check our website for details or follow us on Twitter at @IAGeoChemistry.

Andrea Johansen is a PhD candidate at the University of Wollongong (Australia) and a Residential Scholar at the Australian Institute of Nuclear Science and Engineering. She investigates atmospheric dust transport to islands in the South Pacific and Southern Oceans and the role of dust fertilization in peat primary productivity. Andrea uses a combination of trace element analysis and isotopic characterization (e.g., Nd and Pb isotopes) to reconstruct dust deposition records within peat mires, allowing dust to be provenanced to its source areas and so revealing how dust sources have switched on and off in response to climate variability. The peat cores are dated using ^{210}Pb (by alpha spectrometry), the fallout radionuclides $^{239+240}$Pu, and ^{14}C (by accelerator mass spectrometry). Relative decomposition, which is needed to establish the primary productivity profile, is characterized by isotope ratio mass spectrometry of δ^{13}C, δ^{15}N, and CN%, along with Fourier transform infrared analysis of the organic carbon components. Andrea believes that a better understanding of dust transport and air-mass movements during the Holocene will improve our knowledge of the carbon storage function of the South Pacific and Southern Oceans.

Madison Wood graduated in 2019 with a BSc in Earth sciences, focusing on climate, from the University of New Hampshire (USA). She is now a PhD student at the University of California Santa Cruz (USA) in the Department Earth and Planetary Sciences, where she uses geochemical signatures of seawater chemistry preserved in marine sediments to reconstruct past changes in the carbon cycle. Her dissertation is on stable and radiogenic strontium (Sr) isotopes in seawater, which reflect changes in chemical weathering and marine carbonate burial over Earth history. Using geochemical data and modeling, Madison aims to constrain these past carbon cycle variations over glacial/interglacial cycles and see what implications there are for the current/future climate. She analyzes stable and radiogenic Sr isotopes in marine barite by thermal ionization mass spectrometry to reconstruct the Sr isotopic composition of the ocean over the past 500,000 years.

Rebekah Rhodes earned her BSc in geology from the University of North Carolina at Chapel Hill (USA) in 2012 and her MSc in geology from the University of Wyoming (USA) in 2015. After teaching high school science for two years, Rebekah began a PhD in 2017 at North Carolina State University (USA) concentrating on paleoclimate and geochemistry. Rebekah's current research focuses on understanding how terrestrial climate varies spatially and temporally. More specifically, she is investigating the variability and sensitivity of climate during the Early Eocene Climatic Optimum (EECO) in southwestern Wyoming. Rebekah uses stable C, O, Sr, and clumped isotope analyses on carbonates from the Green River Formation as proxies for climate during the EECO. Additionally, Rebekah hopes to expand the applications of clumped isotope thermometry by testing the method on new materials. Rebekah believes that understanding how terrestrial climate responded to past warm periods will be vital in predicting how climate will be affected by future warming.

Kristina Sukhanova graduated in 2015 with a specialist (equivalent to a master's) degree cum laude in mineralogy and geochemistry from the Mining University (St. Petersburg, Russia). She is currently a PhD student at the Institute of Precambrian Geology and Geochronology, Russian Academy of Sciences. Kristina is studying rare earth element (REE) mobility in silicate minerals from different types of ordinary chondrite (OC) meteorites. She uses a secondary ion mass spectrometer to measure concentrations of trace elements and REEs in olivine and pyroxene and to determine the U–Pb age of Ca-phosphate minerals. Studies of trace element composition in silicate minerals of unequilibrated OCs will help evaluate element mobilization under secondary processes (such as thermal and impact metamorphism, or fluid activity) on OC meteorite parent bodies. Her research will use, for the first time, trace element analyses on silicate minerals from equilibrated OCs. These data will describe the intensity of secondary processes and clarify the structure models of chondrite parent bodies. These data should also help in the petrological analysis of silicate materials from the Ryugu and Bennu asteroids.

Vincent Clementi earned his BSc in environmental science and policy from the University of Maryland (USA) in 2013. He is currently conducting PhD research in oceanography at Rutgers University (New Jersey, USA). Vincent's dissertation focuses on pore-fluid origins, migration, and carbon cycling in the waters off the Chilean margin using new 100-meter-long sediment cores recovered during the 2019 *JOIDES Resolution* 100 expedition, which documented widespread freshening in pore fluids. With support from the IAGC, he is using the isotopes of O, H, and Sr in pore fluids to test the hypothesis that observed freshening and elevated dissolved silica concentrations at a site proximal to Northern Patagonia are driven by submarine groundwater discharge, which could have implications for the regional marine geochemical budget.