



# International Association of GeoChemistry

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## IAGC AWARDS

### Harmon Distinguished Service Award



**Brian Hitchon** has had a very long-standing affiliation with the IAGC and has served our organization in many capacities through the years. Brian was born in St. John, New Brunswick (Canada) in 1930 but was educated in England, where he received his doctorate from Manchester University in 1955. After two years as a geologist with the Northern Rhodesia Geological Survey, he returned to Canada in 1957 and joined the

Alberta Research Council in Edmonton, Alberta. He has held many positions there, including Research Fellow, Vice-President for Facilities, and Acting Director: he is currently emeritus. He retired in 1989 and started Hitchon Geochemical Services Ltd., branching out into publishing with Geoscience Publishing Ltd. in 1995. He was Secretary of the IAGC from 1984–1992, as well as Executive Editor of *Applied Geochemistry* (1986–1993). He has also been the longest-standing chair of the Water–Rock Interaction (WRI) Working Group, leading it from 1974 to 1983, and he hosted the 3rd WRI meeting in Edmonton, Alberta, in 1980. His service to the IAGC also includes a review of the early history of the association, which appeared in the first issue of *Applied Geochemistry* in 1986, as well as an introductory piece in the June 2009 AG Special Issue that reflected on the 40<sup>th</sup> anniversary of the IAGC. For his long record of service to the IAGC and for his contributions to the geochemical community, Brian Hitchon receives the Harmon Distinguished Service Award for 2016.

### IAGC Fellow



IAGC Member and long-time leader of the Geochemistry of the Earth's Surface Working Group, **Sigurður R. Gíslason** is a prominent Icelandic geochemist and research professor in aqueous geochemistry at the University of Iceland. He studies the geochemistry of precipitation, surface water, ground water and geothermal water in Iceland, the geochemistry of basalt weathering and basalt–water interaction and its importance

in the Earth's long-term carbon cycle, the environmental effects of volcanic eruptions, and carbon sequestration in basaltic rocks through both field and laboratory-based experimental studies. With more than 170 peer-reviewed research publications, more than 5,000 research paper citations, and a h-index of 40, Gíslason's major scientific contributions relate to (1) the measurement of the dissolution rates and dissolution mechanisms of volcanic glasses as a function of glass composition, of aqueous solution composition and of temperature; (2) quantifying the chemical/physical erosion rates of basaltic terrains and their contribution to the global carbon cycle; and (3) measuring the environmental effects of volcanic eruptions. For these outstanding research contributions, Sigurður R. Gíslason is named IAGC Fellow for 2016.

### Kharaka Award



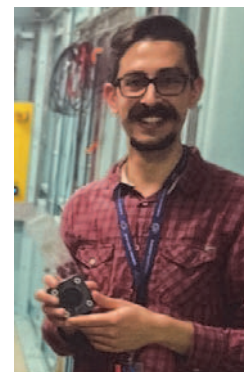
**Kingsley Odigie** is from Nigeria and is currently a postdoctoral researcher at the US Geological Survey in Santa Cruz, California (USA). He completed an undergraduate degree in microbiology and forensic science with a minor in chemistry at San Jose State University (USA) while working at two jobs to support himself. He continued on to a PhD program at University of California Santa Cruz where he was awarded a US

Department of Energy Office of Science Graduate Fellowship. His 2014 dissertation, "Pyrogenic Remobilization of Toxic Metals," used isotopic lead compositions to investigate the sources and mobility of toxic metals released from wildfires in southern California, central Africa, and South America. His work illustrates an important application of geochemistry to the solution of global problem of toxic metals in the environment. This environmental-based research is in tune with what distinguished isotopic geochemist Gunter Faure called "our obligation to humankind ... to monitor the quality of the environment both locally and on a global scale." This work produced publications in *Environmental Science and Technology* and *Applied Geochemistry*. Dr. Odigie is a young geochemist from a developing country with a great career ahead of him. The IAGC is happy to bestow the Kharaka Award to Kingsley Odigie in recognition of his past and present accomplishments, and we wish him well in all his future endeavors in geochemistry.

### ELSEVIER PHD STUDENT RESEARCH GRANT WINNERS

The IAGC is pleased to announce the recipients of the 2016 Student Research Grants, sponsored by Elsevier and the IAGC. Every year, we have many strong research proposals from students from around the world, and every year the awards become even more competitive. We set another record with 37 submissions this year. The success of these grantees demonstrates the high caliber of their research. Congratulations to our grantees!

**Andrea Rielli** earned his BSc in Earth Sciences and MSc in Geoscience and Geotechnologies at the University of Pisa (Italy). He is currently conducting his PhD research at the School of Earth, Atmosphere and Environment, at Monash University (Australia). His work is focused on understanding the role of subduction in the oxidation of the Earth's mantle, with particular attention on the cycling



Andrea Rielli,  
Monash  
University,  
Australia –  
"Sulfur Cycling  
at Subduction  
Zones –  
Implications for  
the Redox State  
of the Deep  
Earth and Arc  
Metallogeny"

of redox-sensitive elements, such as sulfur, at subduction zones. Andrea is studying the metasomatic alteration of ultrahigh-pressure peridotites from the Western Gneiss Region of Norway with the aid of synchrotron X-ray absorption near-edge structure (XANES) spectroscopy, in situ sulfur–carbon isotope measurements, and laser ablation inductively coupled plasma mass spectrometry (LA-ICPMS) analyses. He believes that a better understanding of redox processes at subduction zones will help build more accurate models for the genesis of arc-related ore deposits, the temporal evolution of the atmosphere, and constrain the chemical exchanges between the surface and the interior of our planet.



**Tracey Crossingham** graduated with a BSc in Geological Sciences from the University of Queensland (UQ) (Australia) in 2011, and began researching Cenozoic volcanism in Eastern Australia as an honors student in 2012. Following graduation, she continued to pursue a keen interest in eastern Australian volcanism as a PhD student within the School of Earth Sciences at UQ. Her work focuses on understanding the depth of origin of two seismically shallow hotspot tracks in eastern Australia: the central volcanoes and the Tasmanid Seamounts. Volcanic samples were collected through terrestrial fieldwork and participation in a research cruise aboard the Marine National Facility Research Vessel, *RV Southern Surveyor*. Tracey will use helium isotopes to identify the depth of origin of these two hotspot tracks. Helium isotopes will be complemented by  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology, major and trace element geochemistry, and radiogenic isotopes to further evaluate the timing of magma emplacement, any different mantle source components, and the interaction between the upwelling magma and the lithosphere.



Tracey Crossingham, University of Queensland, Australia – "Hotspot Volcanism Down Under: A Product of Mantle Plumes or the Unique Structure and Motion of the Australian Plate?"



Ana Martínez Fernández, University of California Santa Cruz, United States – "Effects of Ocean Acidification on Benthic Foraminifera and Corals"

**Ana Martínez Fernández** earned a BSc in Environmental Sciences from the Universidad Autónoma de Madrid (Spain) in 2009. She spent a year at Umeå Universitet and at the Climate Impact Research Centre of Abisko, both in Sweden, where she became involved in several research projects related to plankton, pollution and climate change. She is currently a PhD student in the Department of Earth and Planetary Science at the University of California, Santa Cruz (California, USA). Ana is using a multidisciplinary approach to investigate the effects of ocean acidification on Caribbean corals and benthic foraminifera. She is using  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$  as paleoceanographic proxies to study the

impacts of nutrients input through submarine groundwater discharge on calcification of corals living in a natural, low-aragonite saturation environment. She is also studying coral gene expression to assess the potential for adaptation and acclimation to ocean acidification.

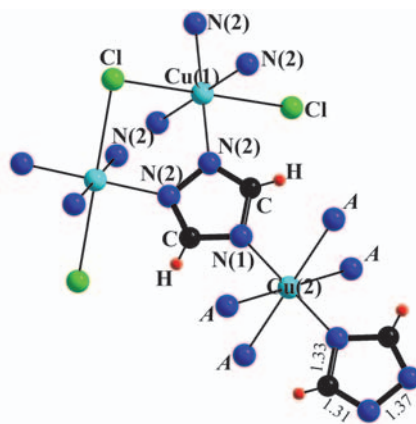
**Ibiyemi Ogunbuyi** obtained her BSc (Hons) in Geology from the University of Ilorin (Nigeria) in 2005 and her MSc in Geochemistry/Mineral Exploration at the University of Ibadan (Nigeria) in 2010. Her research focuses on carbonatites from the Eocene Dicker Willem Complex (SW Namibia) and their associated silicate rocks. Her work focuses on unravelling the timing and sources of REE enrichment using Lu/Hf, Rb/Sr, Nd/Sm, and U/Pb radiogenic isotopes, and also determining rare earth minerals of economic importance by X-ray diffraction and by electron microprobe analysis. Her work will also generate high-quality inductively coupled plasma mass spectrometry trace element data that will further improve our understanding of the petrogenesis of carbonatites in the study area.



Ibiyemi Ogunbuyi, University of Cape Town, South Africa – "The Geochemistry and Source Region of Carbonatites and Associated Alkaline Rocks in Zandkopsdift Namaqualand, South Africa and Southern Namibia."

## MINERAL OF THE YEAR 2015

The International Mineralogical Association (IMA) is pleased to announce that the Mineral of the Year award for 2015 goes to **chanabayaite**. This mineral was discovered and studied by Nikita V. Chukanov of the Russian Academy of Sciences (Chernogolovka, Moscow Region) in collaboration with Natalia V. Zubkova (Moscow State University, MSU), Gerhard Möhn (Niedernhausen, Germany), Igor V. Pekov (MSU), Dmitry Yu. Pushcharovsky (MSU), and Aleksandr E. Zadov (NPP Teplokhim, Moscow). Chanabayaite,  $\text{Cu}_2(\text{N}_3\text{C}_2\text{H}_2)\text{Cl}(\text{NH}_3, \text{Cl}, \text{H}_2\text{O}, \square)_4$ , is a new mineral species from Mt. Pabellón de Pica near the village of Chanabaya in the Tarapacá region of Chile (Chukanov et al. 2015). This unusual organometallic mineral does not only have a unique crystal structure that features the 1,2,4-triazolate anion ( $\text{N}_3\text{C}_2\text{H}_2$ )<sup>-</sup> (see at **LEFT**),



but also acts as a "bridge" between the geosphere and the biosphere because its deep-blue crystals formed where guano deposits (the source of the C and N) came into contact with a chalcopyrite-bearing gabbro (which supplied the Cu). Chanabayaite formed by Na and Cl leaching from, and by the dehydration of, another triazolate-bearing natural compound – and potentially another new mineral (**BELOW**) –

$\text{NaCu}_2\text{Cl}_3[\text{N}_3\text{C}_2\text{H}_2]_2[\text{NH}_3]_2 \cdot 4\text{H}_2\text{O}$  (Zubkova et al. 2016). Prof. Chukanov is known internationally both for his fascinating mineral discoveries (chanabayaite is but one of the 190 new species under Chukanov's belt) and his prominent contributions to mineral spectroscopy [most recently, Chukanov (2014) and Chukanov and Chervonnyi (2016)]. A close runner-up to the winner was decagonite ( $\text{Al}_{71}\text{Ni}_{24}\text{Fe}_5$ ), the second naturally occurring quasicrystal from the Khatyrka CV3 carbonaceous chondrite (Bindi et al. 2015).



Sergey Krivovichev, IMA President

## REFERENCES

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- Zubkova NV and 7 coauthors (2016) The crystal structure of the natural 1,2,4-triazolate compound  $\text{NaCu}_2\text{Cl}_3[\text{N}_3\text{C}_2\text{H}_2]_2[\text{NH}_3]_2 \cdot 4\text{H}_2\text{O}$ . *Zeitschrift für Kristallographie* 231: 47-54