



## International Association of GeoChemistry

[www.iagc-society.org](http://www.iagc-society.org)

### 2016 MEETINGS

#### Joint ISEH, ISEG, and Geoinformatics 2016

14–20 August 2016 in Galway (Ireland) / [www.nuigalway.ie/iseh2016/](http://www.nuigalway.ie/iseh2016/)

The International Symposium on Environment and Health (ISEH) conference series provides a leading international platform for the scientists, consultants, and public servants who are engaged in the multi-disciplinary areas of environment and health to interact. With fast global economic development, the importance of environment and health is widely recognized, and there is a growing demand for international experts to work together on topics of common interest. This conference provides an opportunity for international experts to meet one another, learn from their mutual experiences, and to foster and develop international collaborations. The first ISEH conference was the Sino-European Symposium on Environment and Health (SESEH), which was held in 2012 at the National University of Ireland, Galway; the second conference was upgraded from Sino-European to a more fully inclusive “international” status and became ISEH 2014, which was held in at Peking University in Beijing (China). The third such conference will be ISEH 2016, which makes a welcome return to Galway, and aims to build an even stronger network for international experts working in environment and health.

The International Symposium on Environmental Geochemistry (ISEG) conference series started in the late 1980s. The initial local symposium on environmental geochemistry was held in Finland. After that, the first truly international ISEG symposium was held in Uppsala (Sweden) in 1991. From the beginning, a core group of three geochemical scientists provided leadership to these symposia: Iain Thornton (Imperial College London, UK), Ron Fuge (Aberystwyth University, UK), and Olle Selinus (Linneaus University, Sweden). It was decided in Uppsala that the ISEG symposia would be held every three years. This has resulted in meetings on almost every continent since 1991. From 2013 on, the IAGC has become the official society sponsor of this very popular series. The 2016 meeting of ISEG will be held at National University of Ireland, Galway.

The **Geoinformatics** conference series was initiated by the International Association of Chinese Professionals in Geographic Information Sciences (CPGIS) in 1992. This international conference series has provided a unique forum for exchanging novel ideas and cutting-edge knowledge on geographic information sciences and technologies among geographic information system (GIS) professionals worldwide. The 24<sup>th</sup> International Conference on Geoinformatics (Geoinformatics 2016) will be held at National University of Ireland, Galway (NUI Galway), together with ISEH and ISEG, as a joint international conference. The Geoinformatics 2016 conference is organized by CPGIS and NUI Galway.

The following ISEH/ISEG themes cover a wide range of issues in environment, health, GIS and agriculture:

- Development in environmental chemistry, geochemistry, biogeochemistry
- Pollution: air, water, and soil
- Pollutants: metals and metalloids; persistent organic pollutants and pesticides
- Technologies: new analytical technologies, soil remediation; waste water treatment; air pollution control
- Management and monitoring: social impact assessment, economics and policies
- Medical geology, endemic diseases, environmental health and public health
- Links between environment and health, environment and genetic interaction
- GIS and quantitative methods in environment and population health
- Sustainable development and health: agriculture, industry, traffic, urbanization
- Climate change and population health
- Agriculture: food quality, precision agriculture, nutrient management, agricultural soil quality, infield variation



## International Mineralogical Association

[www.ima-mineralogy.org](http://www.ima-mineralogy.org)

### IMA PHD STUDENT AWARD

The International Mineralogical Association (IMA) is pleased to introduce the PhD Student Award. This new award will recognize and support outstanding students by providing them with the opportunity to present their research at an international level, forge new collaborations (and thereby stimulate fresh ideas), and further develop their career. The award will support participation in an international conference that has a strong IMA involvement. In 2016, the meeting of choice is the 2<sup>nd</sup> European Mineralogical Conference, which will be held 11–15 September 2016 in Rimini (Italy) ([emc2016.socminpet.it](http://emc2016.socminpet.it)). Each award will be US\$1,000, which should be used for conference registration fees plus some, or all, related travel expenses. Three young scientists will be awarded through this program biennially.

Anyone who is enrolled in, and is still within the first five years of, a full-time PhD program in mineralogy (or a closely related discipline) is eligible to apply. Each applicant should provide a curriculum vitae (including a list of publications), a letter of support from their advisor, a cover letter that details their PhD project and achievements, and an explanation of how this award will benefit their research and professional development. Nominations from PhD research advisors (containing the same supporting documentation as above) are also welcome.

The applications and nominations for 2016–2017 should be submitted no later than 2 May 2016 as a single PDF file to Prof. Dr. Patrick Cordier ([patrick.cordier@univ-lille1.fr](mailto:patrick.cordier@univ-lille1.fr)).

### 15<sup>th</sup> Water–Rock Interaction International Symposium (WRI–15)

16–21 October 2016 in Évora (Portugal) / [wri15portugal.org](http://wri15portugal.org)

**Early registration deadline:** 31 May 2016

**Regular registration deadline:** 11 October 2016

Main scientific topics:

1. Essentials of Water–Rock Interactions
2. Particular Environments
3. Case Studies and Applications

### 35<sup>th</sup> International Geological Congress

27 August–4 September 2016 in Cape Town (South Africa)

[www.35igc.org](http://www.35igc.org)

#### “Isotope Proxies in the Critical Zone: Deciphering Time-dependent Processes in Weathering Profiles, Natural and Anthropogenic Fingerprinting of Surface and Groundwater and Residence Time Assessment”

CONVENERS: *Philippe Négrel, Emmanuelle Petelet-Giraud, Rich Wanty, Andreas Hartmann and François Chabaux*

#### “Hydrogeology and Hydrochemistry of Arid and Semi-Arid Africa: A Tribute to W. M. Edmunds”

CONVENERS: *Russell Harmon, Paul Shand, Tom Paces, Ashton Maherry and Philippe Négrel*

### 2017 MEETINGS

#### Applied Isotope Geochemistry 12 (AIG-12)

Mark your calendars! AIG-12 will be held 17–22 September 2017 at the Copper Mountain Resort in Colorado (USA). Keep an eye on our website [www.IAGC-Society.org](http://www.IAGC-Society.org) for updates!



# Czech Geological Society: Mineralogical Section



[www.geologickaspolecnost.cz](http://www.geologickaspolecnost.cz)

The Mineralogical Section is a significant and very active part of the Czech Geological Society ([www.geologickaspolecnost.cz](http://www.geologickaspolecnost.cz)). The section's re-organization into an independent mineralogical society has been repeatedly discussed but has never materialized, partly because of its rather small membership (less than 50), and also to maintain its close ties with other geological disciplines.

## HISTORY

The old mining traditions in what is today the Czech Republic date back to placer gold and tin mining by the Celts ~900 BC and can be traced through the Middle Ages, when the now-classic ore deposits of Kutná Hora (Kuttenberg) and Jáchymov (Joachimsthal) were Europe's main suppliers of silver. These mining activities stimulated the earliest scientific study of various ores and their constituent minerals. Georgius Agricola (1494–1555, “the Father of Mineralogy”) was active in Jáchymov during the main period of mining, summarizing his findings in the twelve volumes of his most famous work, *De re metallica*. Prague's court of Emperor Rudolf II (1552–1612) was a flourishing center of alchemy and science in the early 1600s. Several important mineral collections were founded by Austrian, Czech, and German noblemen over the next 200 years (e.g. I.A. Born 1742–1792, J.N. Mitrowski 1757–1799, K.M. Sternberg 1761–1838), which laid the foundation for the historic collections of the National Museum in Prague and the Moravian Museum in Brno.



National Museum in Prague

Scientific academic societies that included mineralogy in their activities, such as Královská česká společnost nauk (1784), were founded during the 1700s and 1800s along with others in the Austrian Empire. After the empire's breakup, the Czechoslovak Society for Mineralogy and Geology was founded in 1923. The life of this society and its members was strongly influenced by such pivotal historical events as the Munich Treaty and occupation by Nazi Germany, the whole of World War II, the communist coup d'état of 1948, the Soviet invasion of 1968, the “Velvet Revolution” of 1989, and the breakup of Czechoslovakia in 1993.

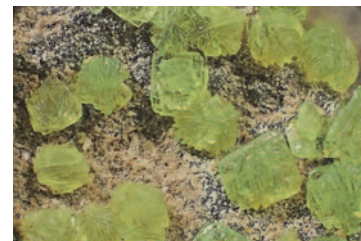
Modern mineralogical research in Czechoslovakia effectively started in the 1700s with the discovery of three important new minerals: uraninite and bornite at Jáchymov (Brückmann 1727; Wallerius 1747) and the lithium mica lepidolite at Rožná (Klaproth 1792). Throughout the 1800s and until World War I, mineralogical science was practiced at several Czech and German universities and museums (e.g. by J.S. Presl 1791–1849; F.X.M. Zippe, 1791–1863; V. Zepharovich, 1830–1890; F. Pošepný, 1836–1895; E. Bořický, 1840–1881). After the foundation of Czechoslovakia in 1918, this research continued to flourish (K. Vrba, 1845–1922; J.E. Hibschi, 1852–1940; F. Becke, 1855–1931; F. Slavík, 1876–1957; B. Ježek, 1877–1950). During WW II, Czech universities were closed and mineralogical research was restricted to supporting the war effort. Also during this time, some of the greatest Czech mineralogists (V. Rosický, 1880–1942; F. Ulrich, 1899–1941; R. Nováček, 1905–1942; L. Kaplanová-Slavíková 1890–1943) perished in Nazi concentration camps.

In the 1950s, renewed industrial growth was accompanied by an exploration and mining boom in Czechoslovakia, which enabled the development of new mineralogical laboratories. A new crop of excellent scientists were firmly establishing themselves in mineralogical research across the country. For example, at the Charles University in Prague there was J. Novák (1902–1971), R. Rost (1912–1999), K. Paděra

(1923–2010), L. Žák (1925–2008), F. Čech (1929–1996), V. Bouška (1933–2001), and M. Rieder; at the Czech Technical University there was A. Ondřej (1887–1956), J. Kašpar (1908–1984), and J. Bauer (1920–1995); at Masaryk University in Brno there was J. Sekanina (1901–1986), plus J. Staněk and B. Fojt; at the Geological Survey there was J.H. Bernard, S. Vrána, M. Drábek, and P. Ondruš; and at the Academy of Sciences there was P. Povondra (1924–2013), Z. Johan (1935–2016), P. Černý, and J. Ulrych. This period ended with the Soviet invasion in August of 1968, which not only stopped the 23<sup>rd</sup> International Geological Congress in Prague in its tracks but also disrupted international cooperation (except with the communist countries) and forced many young talented scientists (e.g. Z. Johan, P. Černý, E. Makovický, E. Slánský) to emigrate. The enthusiastically received “Velvet Revolution” of 1989 and democratization opened the door again for international cooperation and ushered in a new period of rapid growth in mineralogical research.

## RESEARCH STRENGTHS

Today, mineralogical research in the Czech Republic covers a wide spectrum of topics, with internationally recognized strengths in systematic mineralogy, crystal chemistry of various mineral groups, experimental studies of mineral stability, and the development of computational crystallographic methods. Notable for their long tradition and strong recent progress are the fields of secondary uranium minerals (R. Nováček, J. Čejka, J. Sejkora, J. Plášil), the crystal chemistry of phyllosilicates (M. Rieder, Z. Weiss, M. Valášková), tourmalines (P. Povondra, M. Novák), experimental studies on the chalcogenides (M. Drábek, A. Vymazalová, F. Laufek), granitic pegmatites (K. Vrba, J. Sekanina, J. Staněk, F. Čech, P. Černý, D. Němec, M. Novák, J. Cempírek), the rare-earth minerals (R. Škoda, J. Kynický), meteorites and tectites (V. Bouška, R. Skála), and on improving X-ray diffraction techniques (B. Ježek, M. Rieder, L. Palatinus). Over one hundred new minerals have been described from the territory of the Czech Republic: the aforementioned (Bi, Co, Ni, U, Ag)-hydrothermal deposit of Jáchymov is one of the richest localities worldwide (> 430 minerals, including 48 new species).



Linekrite  $K_2Ca_3[(UO_2)(CO_3)_3]_2 \cdot 8H_2O$ , a new mineral from Jáchymov

## PUBLICATIONS AND MEETINGS

The Czech Geological Society publishes a high-quality open-access journal (the current volume is no. 61), which in 1993 started to be published exclusively in English as the *Journal of the Czech Geological Society* and since 2007 became the *Journal of Geosciences* (ISSN 1802-6222; [www.jgeosci.org](http://www.jgeosci.org)). This journal is indexed by Thomson Reuters (IF = 1.40) and welcomes manuscripts in all areas of mineral sciences, geology, petrology, and the geochemistry of crystalline rocks. The society meets bi-annually at joint conferences with the Slovak Geological Society. The society has also been actively involved in the organization of many large international conferences (IMA 2010, Goldschmidt 2011 and 2015, CEMC 2014) and specialized symposia (e.g. Natural Glasses 1988, Lepidolite200 in 1992, Tourmaline 1997, LERM 2003, Granulites & Granulites 2009, Eurogranites 2015). The next large project of international caliber is the symposium “New Minerals and Mineralogy in the 21<sup>st</sup> Century”, which will be held 3–5 September 2016 in Jáchymov, the cradle of mineralogical research in the Czech Republic.

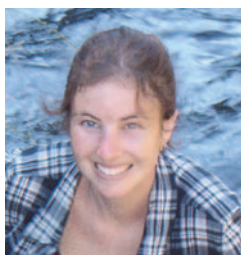
**Milan Novák**

IMA national representative (Czech Republic)





**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.

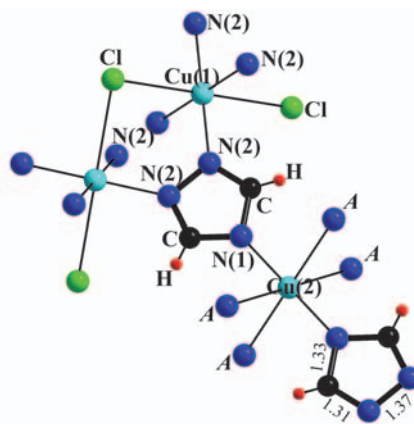
**Ibiyemi Ogunbuyi** obtained her BSc (Hons) in Geology from the University of Ilorin (Nigeria) in 2005 and her MSc in Geochemistry/Mineral Exploration at the University of Ibadan (Nigeria) in 2010. Her research focuses on carbonatites from the Eocene Dicker Willem Complex (SW Namibia) and their associated 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

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- Chukanov NV (2014) *Infrared Spectra of Mineral Species: Extended Library*. Springer-Verlag GmbH, Dordrecht–Heidelberg–New York–London, 1,716 pp
- Chukanov NV, Chervonnyi AD (2016) *Infrared Spectroscopy of Minerals and Related Compounds*. Springer, Cham–Heidelberg–Dordrecht–New York–London, 1,109 pp
- Chukanov NV and 5 coauthors (2015) Chanabayaite,  $\text{Cu}_2(\text{N}_3\text{C}_2\text{H}_2)\text{Cl}(\text{NH}_3, \text{Cl}, \text{H}_2\text{O}, \square)_4$ , a new mineral containing triazolate anion. *Geology of Ore Deposits* 57: 712-720
- 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