International Mineralogical Association

www.ima-mineralogy.org

2020 IMA MEDAL FOR EXCELLENCE TO GEORGES CALAS

The International Mineralogical Association (IMA) is delighted to present its 2020 IMA Medal for Excellence in Mineralogical Research to Georges Calas, Professor Emeritus at the Institute of Mineralogy, Materials Physics and Cosmochemistry, Sorbonne University (Paris, France) and Honorary Member of the University Institute of France. Georges has been praised as "a luminary of our generation across a wide range of activities of relevance to the IMA", "an intellectual pioneer" and "an ambassador for the mineral sciences worldwide". His work spans a wide range of Earth materials, experimental techniques and theoretical approaches to tackle such challenging problems as the stereochemistry of disordered materials, the structure and properties of melts, and radiation damage in crystals and glasses. Georges' trailblazing research has integrated mineralogy, geochemistry and state-of-the-art spectroscopic and diffraction techniques to promote and set future trends in the areas of environmental geochemistry, structure of materials, trace-element chemistry of minerals and glasses, and nuclear waste management. Most of his work focused on materials that are highly disordered and, thus, extremely difficult to characterize at the atomic level, which is why there was little understanding of their structure and properties prior to his work. George's recent appointment to the technical committee charged with the restoration of fire-damaged windows of Cathédrale Notre-Dame de Paris is a measure of his expertise on glass. He had the foresight to recognize the scientific, societal and environmental importance of these classes of materials and had the insight to develop new approaches to their analysis. In the early 1980s, he was one of the first among European scientists to utilize synchrotron radiation to study minerals and has since become a leading international expert in the applications of these methods to Earth materials of all levels of complexity. With more than 15,000 citations, his published record includes over 310 peer-reviewed contributions, 45 of which have been cited more than 100 times!

The impact and breadth of Professor Calas' contributions to mineral sciences is well illustrated by his contributions to eight (!) different thematic issues of *Elements*: on user research facilities (Brown et al. 2006), arsenic (Morin and Calas 2006), glasses and melts (Calas et al. 2006; Henderson et al. 2006), kaolin (Balan et al. 2014), societal and economic impact of geochemistry (Calas et al. 2015), and mineral resources and sustainability (Calas 2017; Brown et al. 2017). In addition to serving as Principal Editor of *Elements* (2011–2013), Georges guest-edited two special issues of the magazine (2006, 2017) and was involved in various editorial capacities in ten other periodicals. The importance of his research on the behaviour of various geomaterials in the surficial environment (particularly those that are poorly or non-crystalline but geochemically active), on their interaction with organic and biological components, and on various types of contaminants in groundwater and soil is impossible to overemphasize, particularly in light of the recent problems with drinking-water contamination, nuclear waste disposal, and environmentally responsible resource extraction at various sites around the globe. Georges has also been very active in educating the Earth science community about the significance and efficacy of spectroscopic techniques in a wide variety of applications. Throughout his career, he has received numerous awards and recognitions, including fellowships of the Mineralogical Society of America (1989), European Association of Geochemistry and Geochemical Society (2009), Society of Glass Technology (2010), American Ceramic Society (2020), an Honorary Fellowship of the Mineralogical Society of Great Britain and Ireland (2018), Léon Bertrand Prize from the French Geological Society (2006), Dolomieu Grand Prize from the French Academy of Sciences (2014), Merit Award from the French Mineralogical Society (2020), and a Schlumberger Medal from the Mineralogical Society of Great Britain and Ireland (2011). In addition to his invited professorships at Stanford University (California, USA) and the Collège de France, he was elected a member of Academia Europaea (2011) and the Royal Society of Canada (2014).

We congratulate Professor Calas on his 2020 IMA Medal for Excellence in Mineralogical Research and look forward to reading about his new exciting discoveries in the Notre Dame glasses and beyond!

REFERENCES

Balan E, Calas G, Bish DL (2014) Kaolin-group minerals: from hydrogen-bonded layers to environmental recorders. Elements 10: 183-188

Brown Jr GE, Calas G, Hemley RJ (2006) Scientific advances made possible by user facilities. Elements 2: 23-30

Brown Jr GE, Hochella Jr MF, Calas G (2017) Improving mitigation of the long-term legacy of mining activities: nano- and molecular-level concepts and methods. Elements 13: 325-330

Calas G (2017) Mineral resources and sustainable development. Elements 13: 301-306

Calas G, Henderson GS, Stebbins JF (2006) Glasses and melts: linking geochemistry and materials science. Elements 2: 265-268

Calas G, MacMillan PF, Bernier-Latmani R (2015) Environmental mineralogy: new challenges, new materials. Elements 11: 247-252

Henderson GS, Calas G, Stebbins JF (2006) The structure of silicate glasses and melts. Elements 2: 269-273

Morin G, Calas G (2006) Arsenic in soils, mine tailings, and former industrial sites. Elements 2: 97-101

MINERAL OF THE YEAR 2019

In 2019, the prestigious title went to **tewite**, which has an unusual crystal structure related to that of tungsten bronzes (Li et al., 2019). The new mineral was discovered near Nanyang village in the Panzhihua–Xichang region of China and named for the presence of major tellurium and tungsten in its chemical composition: $(K_{1.61}Na_{0.06}\square_{0.33})(Te_{1.06}W_{0.35}\square_{0.59})W_5O_{19}$. It occurs in lightly weathered biotite–quartz monzonite near its contact with gabbro, and is associated with feldspars, biotite, hornblende, ilmenite, zircon, zoisite, tourmaline, monazite-(Ce), allanite-(Ce), scheelite and tellurite. Notably, tewite developed after another mineral related to tungsten bronzes and approved recently under the name wumuite, $KAl_{0.33}W_{2.67}O_9$ (Xue et al. 2020). The structure of tewite derives from tungsten bronzes, but, unlike the latter, contains ribbons of corner-sharing WO_6 octahedra separated by highly distorted TeO_6 polyhedra. Like in true tungsten bronzes, K occupies hexagonal channels within an octahedral framework in the tewite structure. We would like to congratulate Guowu Li, Yuan Xue and Ming Xiong on this award and encourage everyone to read about their discoveries in the *European Journal of Mineralogy*.

The IMA Commission on New Minerals, Nomenclature and Classification would also like to acknowledge two close runners-ups: rudabanyaite, a new chloroarsenate with $[Ag_2Hg_2]^{4+}$ cluster cations, discovered by Herta Effenberger and her coauthors (2019) at the Rudabánya ore deposit (Hungary), and davidbrownite-(NH_4), a new phosphate-oxalate phase from the Rowley mine in Arizona (USA), described by Anthony R. Kampf and colleagues (2019).

REFERENCES

Li G, Xue Y, Xiong M (2019) Tewite: a K–Te–W new mineral species with a modified tungsten-bronze type structure, from the Panzhihua-Xichang region, southwest China. European Journal of Mineralogy 31: 145-152

Effenberger H, Szakáll S, Fehér B, Váczi T, Zajzon N (2019) Rudabányaite, a new mineral with a $[Ag_2Hg_2]^{4+}$ cluster cation from the Rudabánya ore deposit (Hungary). European Journal of Mineralogy 31: 537-547

Kampf AR and 5 coauthors (2019) Davidbrownite-(NH_4), $(NH_4,K)_5(V^{4+}O)_2(C_2O_4)[PO_{2.75}(OH)_{1.25}]_4 \cdot 3H_2O$, a new phosphate–oxalate mineral from the Rowley mine, Arizona, USA. Mineralogical Magazine 83: 869-877

Xue Y, Li G, Xie Y (2020) Wumuite ($KAl_{0.33}W_{2.67}O_9$) – a new mineral with an HTB-type structure from the Panzhihua–Xichang region in China. European Journal of Mineralogy 32: 483-494