

Mineralogical Society of the UK and Ireland

www.minersoc.org

SOCIETY MEDALS 2024

Nominations are now sought for the 2022 medals.

CLOSING DATE: **15 April 2023**

Go to <https://www.minersoc.org/awards.html> for information about how to make a nomination. Membership in the Society is not necessary to make or receive an award.

SOCIETY MEDALLISTS FOR 2023

This year's medallists are as follows.

Neumann Medal: Luca Bindi



Luca Bindi is a mineralogical crystallographer whose breadth of research is enormous, ranging from high-pressure alkali- and Cr-bearing phases relevant to mantle geology (majoritic garnets, K-clinopyroxene, and dense hydrous magnesian silicates) to ionic conductivity in intermetallic phases and sulfosalts of interest to the solid-state chemistry and technological communities. He is very well known for his superb structural characterisation of new minerals and his many radical re-evaluations of the structures, crystal chemistry, and physical behaviour of "known" minerals. His work on high-pressure hydrous phases has shed significant light on the novel ways by which these structures become stabilised at the conditions of deep subduction and how they host significant amounts of minor elements relevant to geochemical models of the Earth's mantle.

Luca is everything that a scientist should be: curious, creative, with great attention to detail, while being aware of the wider context of his science...and with an eye open for serendipity. His research on intermetallic quasicrystals is a wonderful example of his skill and ingenuity.

The geoscience and solid-state chemistry communities both acknowledge Luca's major contributions to this important field of physical science. He has published landmark papers on quasicrystals in *Science*, *PNAS*, and the *Philosophical Magazine* and has given many talks worldwide on their discovery, characterisation, and wider geological significance, both on Earth and extra-terrestrially.

While his internationally recognised work on natural quasicrystals is magnificent and transformational, it does not eclipse Luca's other crystallographic achievements. Apart from being enormously productive, he has a rare skill for determining the structures of topologically very complex mineral structures using state-of-the-art methods that sets him apart from most of his contemporaries.

It is particularly noteworthy that, of his 325 journal publications to date, 53 have been published in *Mineralogical Magazine*, and he continues to be a major contributor to this journal. Luca has published many inter-disciplinary studies spanning Earth and materials sciences. Hallmarks of his papers are their clarity and great didactic value, such that others can learn to apply novel approaches to their own research on challenging structures and phenomena.

He is an excellent ambassador for the geosciences in the wider scientific community, having given over 20 invited plenary lectures worldwide, including to the general public.

Luca has received many national and international awards for his science, including the 2006 *EMU Medal for Research Excellence* and the *President's Award* (2015) of the Accademia dei Lincei, Italy's equivalent of the Royal Society. In 2011, the new mineral *lucabindiite* was named for him.

Max Hey Medal: Richard Palin



Richard Palin's interest in petrology developed during his undergraduate courses and led to a Master's project (2007/2008) on metamorphic rocks from the Karakoram. Here, he learned the petrological modelling techniques that have become a central part of his expertise. After a short break in the coal industry in Australia, he returned to Oxford for his doctoral research on the Himalayan group supervised by Mike Searle and Dave Waters. Rather than focus on a single area, it became clear that his skills could be put to more general use in solving petrological problems across the Himalaya–Karakoram–Tibet region (including a side-project on shear zones in Southeast Asia). Alongside this, learning in situ age determination techniques (at NIGL, Keyworth) permitted him to formulate a fully integrated approach to understanding the P–T–time evolution of mountain belts.

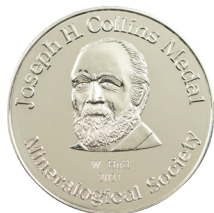
In 2014, he moved to a postdoctoral position at Johannes-Gutenberg University, Mainz, Germany, joining the team led by Prof. Richard White that developed thermodynamic models for computational petrology. This was an exciting time, as he participated in new developments in the modelling of melting and high-temperature processes in metabasic rocks. He was foremost in demonstrating how these could be applied to melt generation in natural systems and in understanding crustal evolution, and this evidently also sparked his interest in processes in the early Earth. Further cross-disciplinary approaches emerged at this time, in collaboration with thermomechanical modellers, thus coupling petrological evolution with geodynamic processes: this was first demonstrated for the subduction of the Tso Moriri ultrahigh-pressure continental slice in Northwest Himalaya.

His subsequent move to the Colorado School of Mines in 2017 opened more doors: the ability as a faculty member to take on students and to enter into further cross-disciplinary collaborations. These have resulted in a number of recent publications that explore geodynamic processes in the present-day and early Earth, as well as on other rocky planets. His publication record shows him to be a highly productive, versatile, and imaginative researcher and communicator, contributing to fundamental debates on Earth's petrology and tectonics. We confidently predict that Richard will continue to be productive and will be a major player in petrology for years to come.

Collins Medal 2023: H. Shaw



Harry Shaw spent the majority of his career (1971–2006) researching the mineralogy of sedimentary rocks. His early career almost exactly coincided with the UK's economic boom triggered by the discovery and rapid exploitation of the North Sea oil and gas fields. It was natural then, that Harry's research should show a bias towards and produce far-reaching impacts for the hydrocarbon industry. Furthermore, inspection of his many publications shows that, in



addition to his work on the North Sea Basin, Harry also worked and published on many of the key petroleum provinces around the world. He also undertook several studies, including his Doctoral dissertation, on the mineralogy of fine-grained recent sediments.

Although Harry's list of peer-reviewed publications is admirable and well cited, it fails to embrace the additional, large number of 'commercial-in-confidence' reports he produced for oil companies throughout this period that were essential to their understanding and development of the North Sea Basin.

For many years, Harry's was a lone voice reminding sedimentary geologists that most sedimentary rocks are mudrocks and that they are (still) under-researched and frequently lumped together as one rock type, in contrast to sandstones, which have been the focus of much research and sub-division. In many ways, this is the core of Harry's contribution through teaching and promoting fine-particle mineralogy and more broadly its science at a time when it was often misunderstood. The chance to really begin to understand mudrock petrography began in earnest in the late 1970s when backscattered electron detectors became available on scanning electron microscopes, and Harry was there, encouraging his students to make use of this powerful new technique. To the end of his active research life, Harry continued to remind people that mudrocks are important. The next chapter in this study, one that is possibly even more important to the industry, is evolving at the present time: the rapid expansion of shale gas and an enhanced appreciation that 'the answer always lies in the shale'—one of Harry's favourite lines.

During his career, Harry Shaw successfully supervised 21 PhD students, many in collaboration with oil companies, and was a key contributor to Imperial College's internationally recognised MSc in petroleum geology.

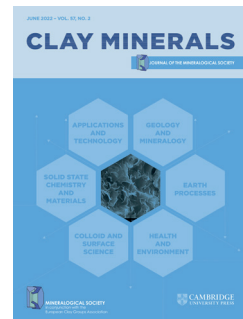
As a result of his enthusiasm and leadership, many of Harry Shaw's students have progressed to serve as academic staff at universities, research scientists at institutes and consultancies, and, in many cases, as hydrocarbon exploration geoscientists in international oil companies around the world. Harry was an exemplary PhD supervisor, reliable, always on hand to discuss research, and diligent in helping with the writing up.

Harry regularly attended meetings organised by the Clay Minerals Group of the MinSoc and the annual meeting of the British Sedimentological Research Group (BSRG) to present his current research work with his research students. International meetings included the International Clay Conference and the Euroclay conference held every 4 years and International Association of Sedimentologists (IAS) meetings. In addition, Harry would attend petroleum geology-related meetings such as the Petroleum Geology of Northwest Europe conferences held at the Barbican in London and special conferences on analytical methods such as fluid inclusion and isotopic analysis used in his research.

Harry Shaw was an active member of the international clay and geological community for more than 50 years. As well as his extensive involvement with the Clay Minerals Group, which he served as Chair, and the Mineralogical Society, he was an active member of the USA-based Clay Minerals Society and the Association Internationale pour l'Étude des Argiles (AIPEA) from 1989 to the present.

RECENTLY PUBLISHED PAPERS IN CLAY MINERALS

- Effects of clay activation and amine chain length on silica-palygorskite heterostructures properties** Lilya Boudriche, Faiza Bergaya, Amel Boudjemaa
- Effective removal of hexavalent chromium with magnetically reduced graphene oxide-bentonite** Shoufa Cao, Jingmao Guo, Jianchao Ma, Jin Pang, Siyu Zhang, Haidong Hao, Danlei Wu, Shaobin Wang
- Molecular dynamics modelling of Na-montmorillonite subjected to uniaxial compression and unidirectional shearing** Ran Yuan, Wen-Ming Wang, Yi He, Yong Fang, Xi-Long Huang
- Distribution of rare earth elements of Tunisian margin clays** Fakher Jamoussi, Alberto Lopez Galindo
- Geometry optimization of an electrochemical reactor for bleaching kaolin** José Angel Cobos-Murcia, Eduardo Hernández-Aguilar, Ariadna Trujillo-Estrada, Grisell Gallegos-Ortega, Victor Esteban Reyes-Cruz
- Characterization and distribution of clay minerals in the soils of Fildes Peninsula and Ardley Island (King George Island, Maritime Antarctica)** Marta Pelayo, Thomas Schmid, Francisco Javier Díaz-Puente, Jerónimo López-Martínez



RECENTLY PUBLISHED PAPERS IN MINERALOGICAL MAGAZINE

- Argentopolybasite, $Ag_{16}Sb_2S_{11}$, a new member of the polybasite group** Martin Števkó, Tomáš Mikuš, Jiří Šejkora, Jakub Plášil, Emil Makovický, Jozef Vlasáč, Anatoly Kasatkin
- Botuobinskite and mirnyite, two new minerals of the crichtonite group included in Cr-pyrope xenocrysts from the Internatsionalnaya kimberlite** Dmitriy I. Rezvukhin, Sergey V. Rashchenko, Igor S. Sharygin, Vladimir G. Malkovets, Taisia A. Alifirova, Leonid A. Pautov, Elena N. Nigmatulina, Yuriy V. Seryotkin
- Silesiaite, ideally $Ca_2Fe^{3+}Sn(Si_2O_7)(Si_2O_6OH)$, a new species in the kristiansenite group: crystal chemistry and structure of holotype silesiaite from Szklarska Poręba, Poland, and Sc-free silesiaite from Häiviäntien, Finland** Adam Pieczka, Sylwia Zelek-Pogudź, Bożena Gołębiowska, Katarzyna M. Stadnicka, Roy Kristiansen
- Bernardevansite, $Al_2(Se^{4+}O_3)_3 \cdot 6H_2O$, dimorphous with alfredo-petrovite and the Al-analogue of mandarinoite, from the El Dragón mine, Potosí, Bolivia** Hexiong Yang, Xiangping Gu, Robert A. Jenkins, Ronald B. Gibbs, Robert T. Downs
- On the definition of distinct mineral species: A critique of current IMA-CNMNC procedures** Frank C. Hawthorne

