

Meet the Authors



Alessandro Aiuppa is a professor of geochemistry and volcanology at the Università di Palermo, Italy. His current research focusses on volcanic gas chemistry, with special emphasis on the cycling of volatiles in and out the planet's interior, magmatic degassing processes, the role of gases in driving explosive basaltic volcanism, and volcanic gas-based instrumental volcano monitoring.



Jaime D. Barnes is a professor in the Department of Geological Sciences (Jackson School of Geosciences) at the University of Texas at Austin. She completed her M.S., Ph.D., and post-doctoral research at the University of New Mexico. Jaime uses stable isotopes as geochemical tracers of fluids in various tectonic and geologic settings from the upper mantle, the oceanic lithosphere, the subducting plate interface, and volcanic systems. Much of her research involves volatile cycling, metamorphism, and volatile transport in subduction zones, serpentinization, and fluid-rock interactions and metasomatism in high-temperature environments with the overarching goal to improve our knowledge of the chemical evolution of the Earth.



Jessica Barnes is an assistant professor of cosmochemistry in the Lunar and Planetary Laboratory at the University of Arizona. Her interests include geochemistry, geochronology, mineralogy, petrology, and planetary volcanology. Her research focuses on the geochemical evolution of the Moon, and the history and origins of volatiles in the Moon, Mars, and asteroids. Jessica is invested in the development of secondary ion mass spectrometry protocols in support of studies of extraterrestrial materials. She is a collaborator on NASA's OSIRIS-REx asteroid sample return mission, Lead Scientist for the Sample Elements and Isotopes Working Group, and is preparing her laboratory for the analysis of returned material from asteroid Bennu.



H el ene Bureau is Director of Research at the French National Center of Research CNRS, working at the Institut de Min eralogie, de physique des Mat eriaux et de Cosmochimie at Sorbonne Universit e Paris (France). Her research interests include high-pressure and high-temperature experimental petrology and geochemistry, mineralogy, and natural sample investigations of the Earth's deep volatile cycling. She is particularly interested in hydrogen and halogen storage in the deep Earth and in natural diamond growth processes in the Earth's mantle.



Ray Burgess is a professor of isotope geochemistry at the University of Manchester, UK. He obtained an undergraduate degree in geology from the University of Southampton and a PhD at the Open University where his research involved investigating sulfur isotope variations in meteorites. He then switched research interests to noble gas isotopes and helped to develop the neutron irradiation technique for measuring halogens during postdoctoral spells at University of Sheffield and SUERC, Glasgow before moving to Manchester nearly 30 years ago. In Manchester, he combines noble gas isotopes with halogens to investigate the origin, movement, and interaction of fluids in the Earth's crust and mantle.



Anita Cadoux is a volcanologist with expertise in field studies, petrology, and geochemistry. She obtained her PhD at the University Paris Sud XI (France) studying the geochronology and petrogenesis of silicic volcanism in central Italy (K-Ar dating, trace and isotope geochemistry). Since then, her research interests and tools have broadened to explore pre-eruptive magma storage conditions (in-situ analysis of dissolved gases in volcanic glasses, experimental petrology), the behaviour of halogens (notably bromine) in magmas, and the impact of volcanogenic halogens on atmospheric chemistry. She is an associate editor of the American Mineralogist Special Collection "Halogens in Planetary Systems".



Patricia Clay is a UK Research and Innovation Future Leaders Fellow at the University of Manchester (UK). She completed her B.S. and M.A. in the US (Syracuse University and Boston University, respectively) before moving to the UK to pursue a PhD at the Open University, which she completed in 2010. She is interested in the origin of volatile elements in the terrestrial planets. In particular, she studies how volatiles are stored in, and distributed between, geochemical reservoirs to better understand their role in planetary evolution. To achieve this, she uses the noble gas and halogen group elements as geochemical tracers in a variety of geologic environments, linking geochemical measurements with petrographic observation, mineralogy, and experimental petrology.



Mitsuru Ebihara is a professor of Earth Sciences at Waseda University (Japan). After completing his PhD (chemistry) at the University of Tokyo in 1979, he worked as a postdoc with Professor Edward Anders at the University of Chicago (USA) from 1979 to 1982, when he moved to Gunma University (Japan). He then moved to Tokyo Metropolitan University in 1988 and took mandatory retirement in 2017, becoming an emeritus professor. In 2018, he became a professor at Waseda University. In 2008 and 2021, he received society awards of Geochemical Society of Japan and Japan Society of Nuclear and Radiochemical Sciences, respectively, for both of which he has served as president. In 1989, he was appointed as a fellow of the Meteoritical Society. His research area is cosmochemistry, for which he developed analytical procedures for determining elemental contents in meteorites and lunar samples using neutron activation and ICP-MS.



Hans Eggenkamp is a scientific associate at the Department of Petrology and Mineral Resources of the Eberhard-Karls-Universit at-T ubingen (Germany). He obtained his PhD from Utrecht University (The Netherlands). His research interest and scientific expertise focus on the geochemistry of stable chlorine and bromine isotopes. He studied these isotope systems during his PhD and during stays at the University of Reading (UK), the Instituto Superior T ecnico (Lisbon, Portugal), the Institut de Physique du Globe de Paris (France), and finally in T ubingen. He is the author of the handbook "The Geochemistry of Stable Chlorine and Bromine Isotopes", published by Springer. He applies his knowledge on stable halogen isotope geochemistry mostly to studies on groundwater, salt, and more recently magmatic systems. He has worked on geothermal energy solutions for industrial and agricultural heating, as well as isotopic and chromatographic analysis solutions for the oil and gas exploration industry.



Bastian Joachim-Mrosko is an assistant professor at the University of Innsbruck (Austria). He specializes in high P-T experiments and likes to combine mineralogical, petrological, and geochemical approaches to investigate the abundance, distribution, storage, and transport of volatiles in the Earth's crust, mantle, and core. He is also interested in the effect of volatiles on physical and chemical processes such as the dynamics of metamorphic and metasomatic reactions. He studied Earth Sciences at the Leibniz University Hannover and did his PhD at the GFZ German Research Centre for Geosciences in Potsdam and TU Berlin (both in Germany) followed by several postdoctoral appointments at the University of Vienna (Austria), the University of Manchester, and the University of Oxford (both UK).



Tatsuhiko Kawamoto is a professor of petrology and geochemistry at Shizuoka University (Japan). After completing his PhD at Kyoto (Japan), he enjoyed a postdoc at Tokyo (Japan), Tempe (USA), and Bayreuth (Germany). He worked on magmas and aqueous fluids under high-pressure and high-temperature conditions at the Institute of Geothermal Sciences, Kyoto University (Japan); he took a sabbatical leave to Paris and Clermont-Ferrand (France). Since he happened to find seawater-like saline fluid inclusions in Pinatubo mantle xenoliths, the importance of being salty in subduction-zone fluids has been his theme. He conducts hydrothermal experiments to learn about carbonation of ultramafic rocks, and often goes to the theaters.



Mark A. Kendrick is an associate professor of geochemistry at the University of Queensland (UQ). His research interests are focused on the origins of crustal fluids, mantle volatiles, and subduction zone processes, which he investigates using innovative combinations of halogen, noble gas, and trace element geochemistry and geochronology. Prior to

joining UQ, he held research positions at the Australian National University and University of Melbourne including the Australian Research Council QEII and Future Fellowships. Before moving to Australia, Kendrick held a postdoctoral position at the Geological Survey of Norway and obtained his PhD from the University of Manchester.



Hirochika Sumino is a professor of geochemistry in the Research Center for Advanced Science and Technology at the University of Tokyo, Japan. He completed his M.S. and Ph.D. at the University of Tokyo, and investigates the origins and behavior of volatiles in the terrestrial mantle using highly sensitive noble gas mass spectrometry. Since

learning a technique for trace halogen determination that combines neutron irradiation and noble gas mass spectrometry while visiting the University of Manchester, UK in 2006, he has applied this method to decipher the origin of water subducted into the mantle at subduction zones.



Susann Tegtmeier is an assistant professor at the University of Saskatchewan (Canada), working in the field of atmospheric chemistry-climate interactions. Her research explores Earth-system processes and interactions of the atmosphere with the marine and terrestrial biosphere based on observational and model data. One focus of her research program is on marine halogenated and sulfur-containing substances, their industrial and agricultural sources, as well as their current and future impact on atmospheric chemistry and climate.



Michael Zolensky is an astromaterials researcher and curator of Stardust, Hayabusa, and spacecraft micro-impact samples at NASA Johnson Space Center. He characterizes the chemical weathering record of asteroids and their associated meteorites, especially aqueous fluid inclusions, and the primitive mineralogy of comets. Among other activities, Mike led sample analysis teams for the Stardust comet coma dust return mission and the Hayabusa asteroid regolith sample return mission. He is now on the Hayabusa2 mission science team and the sample analysis working team for the Mars Moons eXploration Mission. He is the namesake of minor planet 6030/Zolensky and the mineral zolenskyite.

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