Meet the Authors

Alexis K. Ault applies low-temperature thermochronology to resolve cryptic thermal signatures of Earth processes in the rock record. She integrates Fe-oxide (U–Th)/He thermochronology with multiscale microscopy and geochemical data to decode the fingerprint of earthquakes and slow slip events in exhumed fault systems. She received her BA in geology and political science at Wellesley College (Massachusetts, USA), her MSc at University of New Mexico (USA), her PhD at the University of Colorado, Boulder (USA), and completed a National Science Foundation postdoctoral fellowship at the University of Arizona (USA). Alexis’ appointment to associate professor in the Department of Geosciences at Utah State University (USA) marks the culmination of her professional and personal journey among the Four Corners states. She finds inspiration while pedaling her mountain bike in the desert.

Emily H. G. Cooperdock earned her BA (Earth sciences) from Columbia University (New York, USA) and her PhD from the University of Texas at Austin (USA). She was a postdoctoral fellow at Woods Hole Oceanographic Institution (Massachusetts, USA) before starting her current position as an assistant professor at the University of Southern California (USA) where she directs the USCHelium laboratory. Her research focuses on method development and applications of (U–Th)/He thermochronology, with a special focus on tectonic plate boundaries, fluid–rock interactions, and metamorphic processes.

Rebecca M. Flowers is a geochronologist at the University of Colorado, Boulder (USA), where she directs the Thermochronology Research and Instrumentation Laboratory. Her research combines thermochronology, geochronology, and geochemical observations to address problems that include the erosion history of the Great Unconformity, the missing sedimentary record of continental interiors, the topographic evolution of the western U.S. and southern African Plateau, and the impact history of the Moon. Her group’s research also focuses on developing and refining (U–Th)/He thermochronometers.

William S. Cassata is a research scientist at Lawrence Livermore National Laboratory (California, USA) where he leads a noble gas mass spectrometry laboratory. He received a PhD in Earth and planetary science from the University of California at Berkeley (USA) in 2012 and a BS in geology and geophysics from the University of Wisconsin at Madison (USA) in 2007. He investigates the chemical and isotopic evolution of Mars’ atmosphere, the geologic histories of the Moon and Mars, and the origin and evolution of volatiles in the solar system.

Matthew Fox is a NERC Independent Research Fellow and a lecturer at University College London (UK) who works on landscape evolution and geo­dynamics. He received his primary degree from the University of Oxford (UK) (2008) before moving to Switzerland to explore the Alps and to earn his PhD from ETH Zurich (2013). After that, he worked as a postdoctoral research fellow at the University of California, Berkeley (USA) and at the Berkeley Geochronology Center investigating the incision of the Grand Canyon and the landscape evolution of the Antarctic Peninsula. At the London Geochronology Centre, he collects new thermochronometric data and writes numerical models to help interpret them. These data, as well as other geochemical approaches, help us understanding how Earth’s dynamic surface has been (and is being) shaped by tectonics and erosion.

Cécile Gautheron is a professor of geochemistry and mineralogy at the Paris-Saclay University (France). Her research aims to quantify the geodynamic evolution of Earth’s continental crust via the determination of weathering and exhumation timings and rates. In order to quantify these phenomena, she applies and develops dating tools, such as (U–Th)/4He and (U–Th)/21Ne thermochronometers/chronometers, and attempts to understand their theoretical behaviour. She uses multi-disciplinary approaches to study rare gas diffusion processes in minerals, from the atomic to macroscopic scales and from seconds to geological timescales.

Kalin T. McDannell applies noble gas 40Ar/39Ar and U–Th/He and fission-track thermochronology to understand large-scale tectonic and geomorphic problems over long timescales, including the evolution of cratons, mountain belt erosion, and sedimentary basin development. He also conducts experimental mineral diffusion studies and is interested in advancing thermochronology analytical methods and data interpretation. He earned his BS in geology from the Indiana University of Pennsylvania (USA) as a first-generation student and a Ronald E. McNair Scholar, his MS in geology from West Virginia University (USA), and his PhD in Earth and environmental science from Lehigh University (Pennsylvania, USA). He was a postdoctoral fellow at the Geological Survey of Canada (Calgary) prior to joining Dartmouth College (New Hampshire, USA) as a research associate.

Yani M. R. Najman is Reader in Sedimentation and Tectonics at the Lancaster Environment Centre (Lancaster University, UK). She is currently on sabbatical as a Cooperative Institute for Research in Environmental Sciences (CIRES) Fellow at the University of Colorado, Boulder (USA). She interrogates sedimentary archives using detrital geochronology and thermochronology to understand orogenic processes and interpret palaeogeographies. She works extensively in Asia, particularly in the Himalayas, and has also worked in parts of Africa and Antarctica. Prior to coming to Lancaster, Yani held research positions at the University of Edinburgh (UK), the University of Cambridge (UK) and the University of Calgary (Canada), after gaining her BSc in geology and her PhD, both at the University of Edinburgh.

David L. Shuster is a professor of isotope geochemistry in the Department of Earth and Planetary Science at the University of California, Berkeley (USA) where he directs the Surface Process Geochemistry Research Group and the Noble Gas Thermochronometry Laboratory at the Berkeley Geochronology Center. His research interests include noble gas isotope geochemistry, thermochronometry, and cosmogenic nuclide observations applied to problems involving alpine glacial erosion, chemical weathering, lunar impacts and magnetism, and the thermal evolution of Martian meteorites. He is currently a return-sample science specialist on NASA’s Mars 2020 mission who will use the Perseverance rover to (remotely) collect and return Mars surface samples to Earth for future analyses.
Daniel F. Stockli is the Chevron (Gulf) Centennial Professor in Geological Sciences at the Jackson School of Geosciences of the University of Texas at Austin (USA). He received his diploma from ETH Zurich (Switzerland), his PhD from Stanford University (California, USA), and is currently the Director of the Texas UTChron Geo- and Thermochronology Laboratory. His research combines tectonics, petrology, and stratigraphy with geo- and thermochronometry to investigate the timing and thermal evolution of mountain belts, continental rifts, and rifted margins. He has been engaged in the development and application of new geo- and thermochronometric dating techniques, integrating these with trace-element signatures and applying them to tectonic and detrital provenance studies.

Marissa M. Tremblay uses noble gas thermochronology to study the physical and chemical processes that shape the surfaces of Earth and other planetary bodies. She also conducts experimental research on the kinetics of noble gas diffusion in minerals. Marissa earned her BA from Barnard College (New York, USA) and her PhD from the University of California, Berkeley (USA). She held a Royal Society Newton International Fellowship at the Scottish Universities Environmental Research Centre (UK) prior to joining Purdue University (Indiana, USA) as an assistant professor in 2019. Marissa is the recipient of the 2018 Charles and Nancy Naeser Prize (International Standing Committee on Thermochronology) and of the 2020 Doris M. Curtis Outstanding Woman in Science Award (Geological Society of America).

Peter K. Zeitler is a professor of Earth and environmental sciences at Lehigh University (Pennsylvania, USA). His research interests include the development and application of techniques in geochronology, the geodynamics of coupled surface and tectonic processes, the origin of mountains, and the geologic evolution of Asia. He earned his BA, MS, and PhD degrees (the latter in 1983) from Dartmouth College (New Hampshire, USA). He then spent five years as a research fellow in isotope geochemistry at the Research School of Earth Sciences at the Australian National University. In 2013, Zeitler was named a Fellow of the America Geophysical Union; in 2014 he became the Chair of the International Standing Committee on Thermochronology (ISCT); and in 2016 he was awarded ISCT’s Dodson Prize in thermochronology.

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MSc Strategic Earth Resources

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