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# Anders McCarthy receives the 2020 Paul Niggli Medal



The Paul Niggli Medal is Switzerland's most prestigious award for young earth scientist who made outstanding contributions in the research fields of mineralogy, geochemistry, petrology, resource geology or solid-earth geophysics. The Paul Niggli Medal honours and supports young ambassadors of Swiss geoscience, who are either Swiss citizens or obtained at least two of their academic degrees in the Swiss university system (BSc or MSc and usually their PhD).

The Board of the Paul Niggli Foundation decided, in their session of 5 June 2020, to award the Paul Niggli Medal for the year 2020 to Anders McCarthy, in recognition of his outstanding research contributions in the field of trans-crustal igneous petrology, mantle processes and large-scale geodynamics from rifting to subduction initiation.

*Maria Schönbächler (ETH Zürich)*

*On behalf of the Foundation Council of the Paul Niggli Stiftung*

## 1 Citation

It is a great pleasure to introduce Anders McCarthy, the 2020 Niggli medalist, with Swedish and Irish roots and education in Switzerland. The Niggli medal awarded to Anders McCarthy is a reconnaissance of his work and reflects the excellence he has achieved in the fields of petrology, geochemistry and geodynamics. Anders is a leading young Earth scientist that has scientifically grown in a collaborative environment and is not afraid to bridge the scales

between small scale petrological processes and large scale interpretations on the plate tectonic scale. He has contributed significant papers on the volcanic-plutonic connection, on ophiolite petrology, on subduction initiation in the Izu-Bonin island arc and its application to the Alps.

Anders did his undergraduate and Master studies at the University of Lausanne, focusing on the petrology and geochemistry of ophiolites in the Western Alps, which provided him a broad background in igneous petrology and geochemistry for his future PhD and Postdoctoral studies. This work has been recognized by the faculty price from the University of Lausanne. In his PhD under my supervision, he examined the origin of Comb layers and orbicular diorites in the Sierra Nevada batholith in the United States. Through careful petrography, size-frequency statistics, major and trace element geochemistry and petrological modelling, he demonstrated that Comb layers and orbicular diorites form by multiple pulses of hydrous magmas that allow the determination of life-cycles in subvolcanic magmatic plumbing systems.

In 2017 Anders received an SNSF early postdoc mobility grant and moved to the University of Bristol to work with Jon Blundy, investigating CO<sub>2</sub> and other anions in plagioclase in volcanic and plutonic rocks by in-situ microanalysis and by experimental petrology. In parallel to his PhD and postdoctoral studies he was invited to sail on the IODP expedition 351 to the Izu Bonin arc, to work on subduction initiation, and on another IODP expedition 367 to study rifting and spreading in the South China sea. These cruises inspired his work to think about the problem of subduction initiation in the Alps. This readiness to take on the big problems illustrates a real strength

of Anders scientific outlook. Or to quote one of the supporters: ‘The breadth, drive and creativity of Anders’ research activity is quite phenomenal, I’m not sure that I have seen anything quite like it.’ His academic career will continue in Switzerland with an Ambizione fellowship at ETH Zürich starting in summer 2021. On behalf of the scientists that supported the nomination I would like to congratulate Anders McCarthy to his achievements and the Paul Niggli medal, and wish him all the best for his future career.

*Othmar Müntener (University of Lausanne)*

## 2 Response

I am deeply honoured to have been awarded the 2020 Paul Niggli Medal and would like to first and foremost thank the board of the Paul Niggli Foundation and the scientists who supported my nomination. Although there is, in most cases, only one name etched on a scientific award, scientific achievements and prestigious awards are only made possible through a combination of sturdy scientific funding opportunities and a supportive environment, both from an intellectual and human perspective. Above all else, these achievements are incrementally constructed through an array of scientific collaborations, where individual scientists, guided by sheer passion and curiosity, are brought together to try and solve a particular geological problem. So to all who have supported my scientific endeavours, friends, family, colleagues, thank you!

I would like to thank the Swiss National Science Foundation for continuously supporting my early scientific career, including awarding me with a SNSF Post-doc Mobility, Advanced Post-doc Mobility and recently an Ambizione Fellowship. The support from the Swiss government to young scientists is, as far as my experience goes, unrivalled worldwide. Thank you as well to Swiss International Ocean Discovery Program (IODP), which has been paramount to my scientific endeavours, supporting me during two IODP expeditions to the Izu-Bonin arc and South China Sea in 2015 and 2018, respectively.

The friendships and scientific collaborations developed at the Institute of Earth Sciences at the University of Lausanne during the course of my Masters and PhD have been crucial in shaping my early career and the person I am today. I am immensely grateful to Othmar Müntener, my mentor and friend, for enticing me to sail on drilling expeditions, for introducing me to the world

of mantle rocks and to investigate the peculiar nature of orbicular rocks and comb layering. Your comment, from many years ago during a conversation during my Masters project “*We do not prove them wrong, we can prove there is an alternative interpretation!*” will remain an important marker shaping my early years in research, so thank you for continuously challenging me and providing crucial perspectives in scientific thought during my formative years.

I would also like to thank two other mentors in particular who have offered me different scientific perspectives enabling me to develop my own understanding of magmatic processes in recent years. Thank you Gene Yogodzinski (University of South Carolina, USA) for introducing me to the exciting world of the Aleutians, the origins of high-magnesian andesites, slab melts and isotope geochemistry during my PhD and post-doc years. I am also incredibly grateful to Jon Blundy for supporting me during my post-doc fellowships at the University of Bristol (UK) for the past 3 years. These years did go by surprisingly fast, but thank you for your support, friendship, your scientific curiosity and engagement during these past years. Thank you for introducing me to the world of CO<sub>2</sub> in arc magmas and experimental petrology. These are fun times to be an igneous petrologist.

My passion for geology was randomly awoken at the age of ten, as I sat in a movie theatre in Switzerland watching Pierce Brosnan as a volcanologist in Dante’s Peak. This movie crystallized my passion for geology early on. Granted, writing grants and papers is, on the whole, somewhat less thrilling than running from erupting volcanoes (but also less dangerous), nevertheless, after so many years, my passion for the world of geology, magmatism and tectonic processes remains undimmed. I look forward to this next upcoming decade with unbridled excitement as I start my Swiss SNF Ambizione Fellowship at ETHZ and open new avenues of scientific collaborations.

*Anders McCarthy (University of Bristol).*

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