

## Mélanie Barboni honoured by the 2017 Paul Niggli Medal

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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 have obtained at least two of their academic degrees in the Swiss university system (BSc or MSc and usually their PhD).

The Council of the Paul Niggli Foundation has decided in their session of 2. June 2017 to award the Paul Niggli Medal to Mélanie Barboni, presently at University of California in Los Angeles (UCLA). The 2017 medal is awarded to Mélanie Barboni in recognition of her outstanding research achievements in magmatic petrology, notably the innovative combination of geology, geochemistry and the geochronology of physical time scales of pluton emplacement and crystallisation. Christoph Heinrich handed over the award to Mélanie's parents, Chantal and Mario Barboni at the 15th Swiss Geoscience Meeting in Davos on 17. November 2017, followed by the recipient transmitting her acknowledgements via internet on-screen.

### Citation

Mélanie Barboni studied geology at the University of Lausanne and did her master thesis in petrology and geochemistry, specifically on the construction and evolution of upper-crustal magmatic intrusions. Her master thesis was awarded the Augustin Lombard price of excellence from the Ecole Lémanique des Sciences de la Terre (ELSTE). Her results opened new perspectives for research that led her to stay in Lausanne for a 4 years PhD, funded by the SNSF under the supervision of François Bussy. Her PhD focused on coupling thermal and magma-flow modeling

with high-precision geochronology to constrain the growth and evolution of magmatic reservoirs. She brilliantly re-interpreted the evolution of a classical layered intrusion in Brittany through detailed fieldwork coupled to precise age dating. She was awarded the Prix de la Faculté des Géosciences et de l'Environnement of the University of Lausanne.

This is when Mélanie really took off. She then obtained an SNF postdoctoral fellowship to go to Princeton University in New Jersey, USA. There she contributed to set up their new world-class high-precision geochronology facility. She extended her studies to the connection between magma chambers with volcanic eruptions. She focused on the youngest granitic pluton in Europe, the Monte Capanne granite on the island of Elba in Italy. Taking advantage of very small absolute errors on U-Pb zircon dating in such young rocks, she documented for the very first time the growth rate of feldspar megacrysts using zircon inclusions in these megacrysts. Her results put strong constraints on upper crustal magma residence times, as well as on the timing of related volcanic eruption and hazard assessment.

Mélanie obtained an advanced mobility post-doctoral fellowship from SNF in 2014 to go to the University of California at Los Angeles. There she added ion probe work to her analytical expertise, studying U-series dating of an active magmatic system. While at UCLA she applied for a competitive NASA-Emerging World grant—and obtained it! Her proposal was one of 15 projects selected out of 130 submissions. Last January, she created a buzz establishing for the first time the precise age of the Moon (4.51 billion years). She obtained three job offers for tenure-track positions in the USA, from which she chose Arizona State University, where Mélanie has started in April.

Quoting from a few comments obtained for the Niggli Medal nomination: Kevin McKeegan, from UCLA states: "In my opinion, Mélanie Barboni is not only an excellent analytical geochemist, well-versed in several state-of-the-art techniques, but even more significantly she applies her impressive field and laboratory skills to take zircon geochronology to another scientific level, using it to make

fundamental contributions to large-scale problems in igneous petrology. Her work on constraining crystallization rates in magma chambers is unprecedented in its precision, elegance, and importance”.

Or to quote Mark Harrison, from UCLA as well: “Mélanie’s career has been characterized by a continuous supply of good ideas and superb research prosecution, the results of which are communicated in splendid fashion. I see her as a role model for young people—a critical, independent thinker with boundless enthusiasm for her science—and thus an ideal candidate for the Niggli Medal.”

*François Bussy and Lukas Baumgartner  
(University of Lausanne)*

## Response

I am deeply honored to be awarded the 2017 Paul Niggli Medal. I would like to express my gratitude to the board of the Niggli Foundation and the people that nominated and supported me for this award. This medal means a lot to me. Beyond the obvious pride and pleasure to receive a prestigious prize, it also shows that people in my home country have been following my path from afar. Having lived abroad for so long, and being occasionally homesick, it really means a lot to me to be remembered in my “Homeland”.

I am deeply grateful to Switzerland, for multiple reasons. First for the outstanding formation as a geologist and researcher that I received at the University of Lausanne. Swiss Universities offer a premium education open to all, and I feel very lucky to have done my college and PhD years in Switzerland. I would like to thank here the people that helped me becoming the researcher I am today. First of course, Prof. François Bussy, my PhD advisor, for raising a baby scientist during four years until she could fly by herself across the Atlantic with enough knowledge to start her research career smoothly. Prof. Lukas Baumgartner in

Lausanne for encouraging and giving me the confidence to start a career in the US. And Profs. Urs Schaltegger in Geneva and Othmar Müntener in Lausanne for numerous advices and support during my PhD years.

I am also deeply grateful for the amazing support that was given to me by the Swiss National Science Foundation. It was thanks to a SNF Early Postdoc Mobility Fellowship that I had the opportunity to conduct research at Princeton University. The level of support Switzerland offers to its young scientists through these SNF fellowships is in my knowledge unique to our country. I actually benefitiate from a second SNF fellowship, Advanced Mobility this time, to move from Princeton to UCLA. Thanks to my time there, I was able to connect with people in the department, broaden my scientific horizons by starting working on the Moon and obtain NASA support for my research. Not mentioning getting a faculty position at Arizona State University, an amazing place to conduct research in Earth and Space Sciences. I would never have been able to reach any of those goals—including that special feeling of holding a Moon rock in my hand that was collected by the Apollo astronauts—without the support of the Swiss National Foundation, and I am deeply thankful.

Finally, I would like to thank three amazing mentors I had the chance to meet here in the United States. Prof. Blair Schoene at Princeton University and Professors Mark Harrison and Kevin McKeegan at UCLA. They took a researcher in her teenage years and helped her mature into a scientist that is—hopefully—ready to be a successful faculty and mentor. I am extremely lucky to be working with them, and knowing that I will always have their friendship and support through my career as a professor means the world to me. It is a very long and hard way to become a successful researcher, and without the support of Switzerland, the SNF and all my mentors mentioned above, I would not be where I am today. Thank you so much!

*Mélanie Barboni  
(Arizona State University)*