Paul Niggli-Stiftung

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Paul Niggli-Stiftung

Anlässlich des 181. Jahreskongresses der Schweizerischen Akademie der Naturwissenschaften und der 77. Jahrestagung der Schweizerischen Mineralogischen und Petrographischen Gesellschaft am 18. 10. 2001 in Yverdon-les-Bains, verlieh die Paul Niggli-Stiftung die elfte Paul Niggli-Medaille. Die Medaille wird verliehen an junge, maximal 35 jährige schweizerische Wissenschafterinnen und Wissenschafter, die auf den Gebieten der Mineralogie, Kristallographie, Petrologie, Geochemie, Lagerstättenkunde, Geophysik und deren technische Anwendungen eine hervorragende Leistung erbracht haben.

Die bisherigen Preisträger sind:
1988: Christoph Heinrich
1990: Lukas P. Baumgartner
1992: Peter Ulmer und Beda Hofmann
1993: Reto Giere
1995: Martin Kunz
1998: Jean-Claude Vannay
2000: Jörg Hermann, Othmar Müntener und Balz Samuel Kamber

Vorstellung des Preisträgers für 2001

Werner E. Halter

am 21. 1. 1969 in Wien geboren (Schweizer Staatsbürger), verheiratet, 2 Kinder.

1987–1992: Studium an der Universität Lausanne, abgeschlossen mit einem Diplom "Etude géologique et minéralogique du Nord-Est d'Alagna, Valsesia". Betreuer: H. R. Pfeifer; Fakultätspreis für hervorragende Diplomarbeit (1992).

1992–1997: Ph.D. studies at McGill University, Montreal, Canada, abgeschlossen mit einer Dissertation "Physiochemical controls on greisen formation and cassiterite deposition at the East Kemptville tin deposit, Nova Scotia". Supervisor: A.E. Williams-Jones; CIM Award for the best Ph.D. thesis in the field of Economic Geology in Canada (1997).

1997–1999: Wissenschaftlicher Assistent an der Universität Lausanne: Experimentelle Studien zur Arsenadsorption in Böden (Oberflächenchemie).

Seit 1999: Wissenschaftlicher Assistent and der ETH Zürich: Untersuchungen der Faktoren, die die zeitliche Regulierung und Zusammensetzung der Volatilen aus andesitischen Systemen kontrollieren.

Ueber 15 Publikationen in internationalen Zeitschriften

Wissenschatliches Interesse: Verbindung von geologischen Beobachtungen mit thermodynamischen Modellen der Fluid-Gesteins Wechselwirkung (Vulkanismus, Lagerstättenbildung, Umweltgeochemie).

Verleihung der Paul Niggli-Medaille

Der Stiftungsrat der Paul Niggli-Stiftung hat an seiner Sitzung vom 22. Juni 2001 beschlossen, die Paul Niggli-Medaille für das Jahr 2001 an folgenden jungen Wissenschaftler zu verleihen:

Werner Eduard Halter

In Anerkennung bahnbrechender wissenschaftlicher Leistungen auf den Gebieten der magmatischen und hydrothermalen Erzlagerstättengenese, aufbauend auf Feldarbeit, Laborexperimenten und thermodynamischen Modellrechnungen sowie unter Entwicklung neuer analytischer Methodik.

Yverdon-les-Bains, 18. Oktober 2001
Prof. Thomas Armbruster
Vizepräsident des Stiftungsrats

Verdankung der Paul Niggli-Medaille



Sehr geehrter Herr Präsident, mes Dames et Messieurs, meine Damen und Herren,

Awards such as the Paul Niggli Medal are made prestigious through the name of previous medallists and it is truly an honour and a great pleasure for me to be associated with those who were presented with this distinction before me. As we all know, holders of this medal are persuing the high-quality research for which they were awarded and receiving this medal today is both, an immense gratification and an encouragement for which I would like to sincerely thank all the members of the committee and of course Chris Heinrich who suggested my name. In itself, Chris' suggestion is of great value to me.

My professional itinerary has taken me through several places and allowed me to meet many people, who directly or indirectly influenced my work. At this early stage of my career, my research largely reflects this input and this medal mostly mirrors the support and confidence others have granted me with. Thus, I would like to take this opportunity to acknowledge all friends and colleagues who helped me along this way. And the first person I wish to thank is my wife, Martine, for her constant encouragements and for compensating my lack of availability by dedicating all her time to our family.

My first experience in Earth Sciences comes form Lausanne, where I studied between 1987 and 1992. My diploma thesis was a structural, mineralogical and geochemical investigation of a part of the alpine suture, in the upper Sesia valley, in northern Italy. This work was conducted under the supervision of Hansruedi Pfeifer, Albrecht Steck and Arthur Escher who gave me the first insight into research. I also suspect them to have sidetracked me on this unusual path. The main "responsibility" falls on Hansruedi, as his help throughout my thesis provided me with attractive results and the enthusiasm he communicated significantly influenced my decision in pursuing research.

From there, starting a Ph.D. thesis was an obvious choice to me, and an opportunity to experience other approaches and to spend some time in another country. As I was looking for a project in economic geology, Canada was first on my list and I was lucky to find the necessary financial support at McGill University in Montréal in the group of Willy Williams-Jones. We moved to Canada in the fall of 1992 and the years we spent there were an extremely valuable experience, both personally and professionally. I am grateful to all the friends and colleagues we had there, and particularly to Willy who gave me this chance in the first place, and kept me going with his thrill for research and his experienced insight into Science.

The topic of my Ph.D. thesis was to determine the source and the evolution of a mineralizing fluid in a greisen-hosted tin deposit and to identify

the causes for cassiterite precipitation. It was based on a fluid inclusion investigation and a study of fluid-rock interaction through mass balance calculations and geochemical modelling. The frustrating part was trying to model mass transport in high temperature, high salinity fluids as we have only little constraints from experimental data. So when Hansruedi offered me a post-doc position in Lausanne to study low temperature, environmental issues, I thought this was a chance to investigate a system I might constrain better...

The position in Lausanne was mainly to support collaboration with the university of Geneva in a 3ème cycle en Sciences de l'Environment, for which Hansruedi was the coordinator in Lausanne. In parallel, we conducted some batch adsorption experiments, to try and better understand the behaviour of arsenic in ground waters. What I took from this work was the extreme complexity of natural soils and the little information we have on important processes such as the kinetics of reactions or the organic complexation of metals. Natural low temperature systems appeared to me as even less understood as hydrothermal solutions.

After two years in Lausanne, Chris Heinrich offered me an opportunity to raise again the temperature of my investigations and work on magmatic systems. I started to work at the ETH in early 1999 and feel very lucky to be part of Chris' very dynamic and enthusiastic group. Chris not only has the rare skill of formulating the appropriate questions, but he provides the help and encouragement to address them. Moreover, trying to keep up with other peoples excellent work has been very stimulating. Thus, working in this group has been a lot of fun and highly enriching.

Our research in Zürich has focussed on the mechanisms, which control the formation and the chemistry of magmatic-hydrothermal fluids in ore-forming systems. My work is mainly based on investigations of melt inclusions with a laser-ablation ICP-MS. In tight collaboration with Thomas Pettke, the first objective was to develop a quantification procedure with which we can analyse entire melt inclusions for their major and trace element chemistry. As Thomas knows LA-ICP-MS machines inside-out, we were able to manage this first step quite successfully and are now in the course of interpreting our data, to find out more about processes governing the evolution of magma chambers.

The next objective is to try and understand the chemical evolution and the thermodynamics of these systems. The idea is to construct a numerical model to simulate phase equilibria in magmatic systems, based on the speciation of silicate melts. I was told that this is the job of a lifetime but after all, this medal rewards young scientist and, accordingly, I take it as a starting point in my career. Indeed, I consider this medal not only as an acknowledgement for my previous activities, but mostly as an encouragement for pursuing my research in the coming years. In order for later medallists to be as honoured as I am today, I will put all my effort into this task and try to meet the expectations that were put into my work by awarding me the Paul Niggli Medal.