SC2: Fluid and melt inclusion studies applied to ore deposit research

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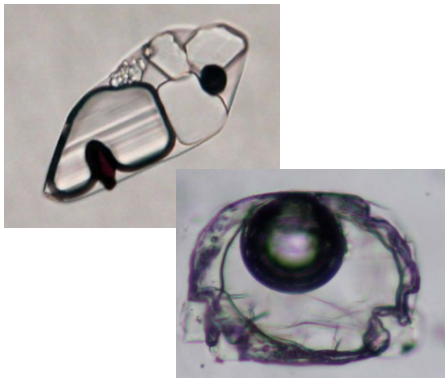
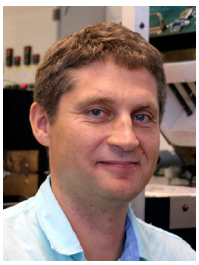
Pre-conference short course 26-27 August 2023, University of Geneva



Studying silicate melt and fluid inclusions in minerals plays a very important role in our understanding of ore-forming magmatic and hydrothermal systems. These microscopic-sized features preserve an often time-resolved record of the physical and chemical evolution of the system within which they formed, providing more direct and quantitative information in comparison to other available methodologies.

The objective of this course is to deliver a solid framework of good practices to maximize the information to be gained in fluid and melt inclusion studies and highlight the directions in which the science utilizing inclusions in minerals is going. We will introduce the participants to effective workflow strategies with emphasis on thoughtful sample selection and detailed petrography incorporating cathodoluminescence imaging.

Subsequently, by using case studies, we will highlight how the value of studying inclusions can be further enhanced by combining inclusion data with alternative sources of geochemical information and numerical modeling. The course will be concluded with discussing future challenges that can be addressed by inclusion studies, as well as ongoing developments in microanalytical and numerical modeling techniques that may further increase the utility of studying fluid and melt inclusions in the future.



Zoltan Zajacz is professor of mineral resources at the University of Geneva, Switzerland. He received his Ph.D. degree in 2007 at ETH Zürich. Subsequently, he held various postdoctoral fellowships at the University of Maryland and ETH Zürich, and a faculty appointment at the University of Toronto before moving to Geneva. In his research, he combines high-pressure laboratory experiments and field-based studies often reliant on fluid and melt inclusions to better understand controls on magmatic ore fertility and the genesis of magmatic-hydrothermal ore deposits.

Thomas Driesner is a geochemist at ETH Zürich, with 30 years of research experience on hydrothermal fluids in geothermal and ore-forming environments. His main focus is on numerical simulation of (magmatic-) hydrothermal fluid flow and on fluid thermodynamics, but being a geologist by training he also employs field work, fluid inclusions and stable isotopes.

Kalin Kouzmanov is a senior lecturer and senior research scientist at the Department of Earth sciences of the University of Geneva. He completed his PhD in economic geology at the University of Orléans, France in 2001. His research program focuses on the architecture of magmatic-hydrothermal systems, fluid processes in porphyry-related systems, hydrothermal geochemistry and ore mineralogy.