Webinars of geology

Department of Earth Sciences - Torino

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4 pm (Rome time)

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LINK WEBINAR

A new protocol to interpret volatile contents of magmas recorded by melt inclusions

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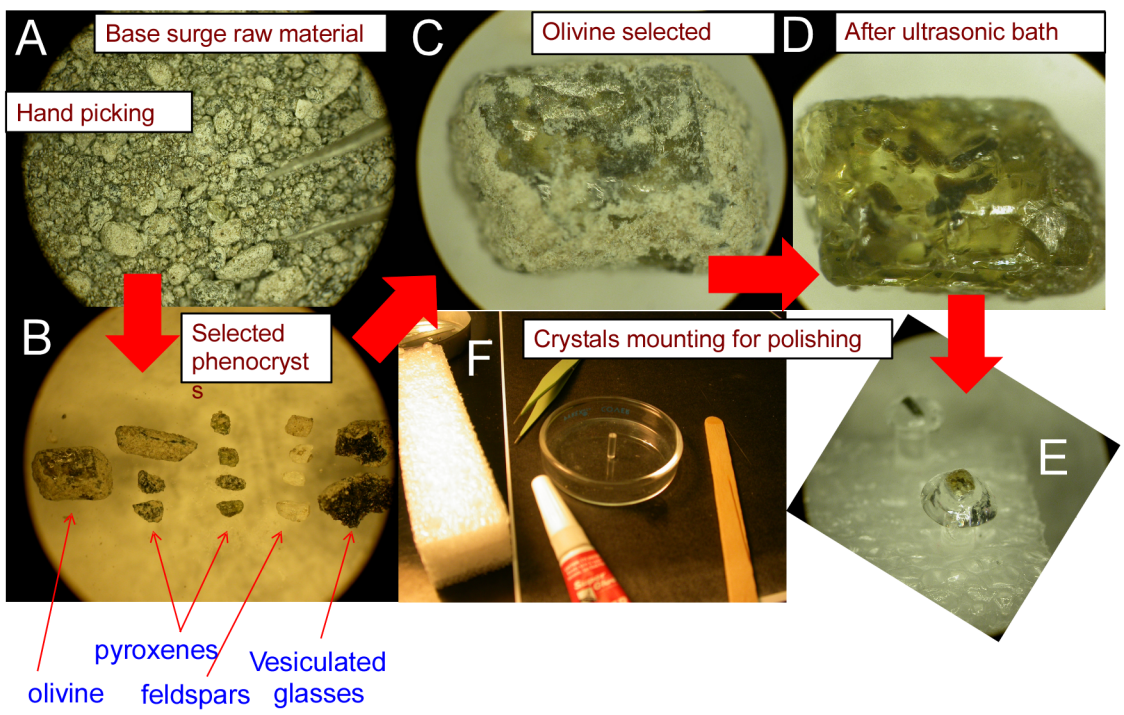
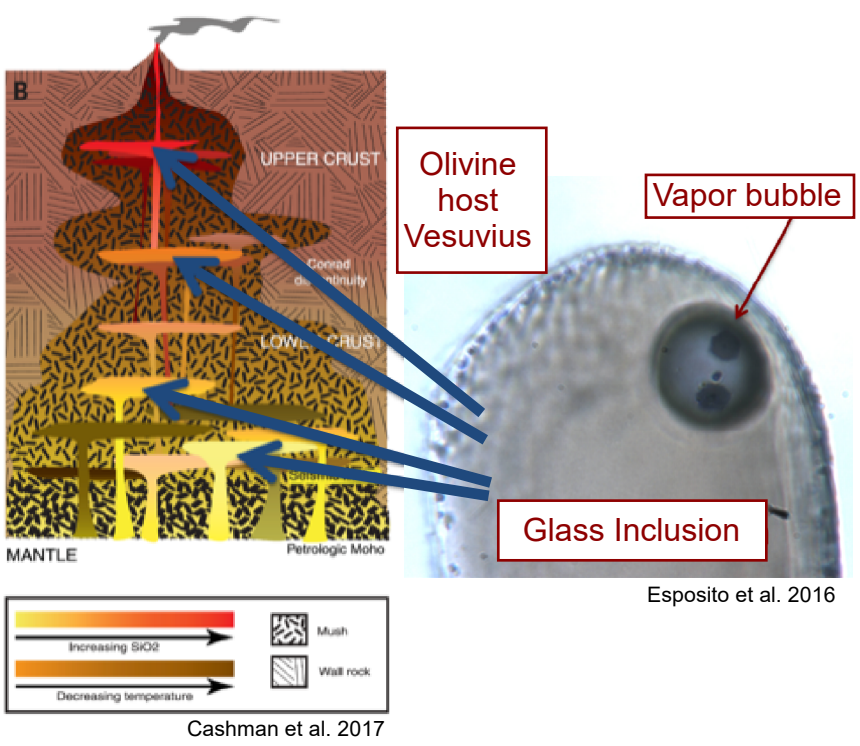
One of the main goals of studying melt inclusions (MI) is to constrain the pre¬eruptive physical and chemical processes that have occurred in a magma reservoir at the micro¬scale. In particular, the MI are studied to understand the volatile evolution during magma differentiations. The pre-eruptive volatile contents are used by researchers to understand magma dynamics because under volatile-saturated conditions the solubility of volatile is mainly controlled by pressure (depths). Magma dynamics have implications for volcanic hazards. Pre-eruptive volatiles are also used to understand the composition of magmatic volatile phases (MVP) in equilibrium with the magma, with implications for the formation of ore deposits. In addition, studying pre-eruptive volatiles has important implications for the volatile global budget of the Earth and other extraterrestrial bodies as the Moon. One of the common features of the volatile dataset recorded by MI from a single sample is the high variability of their contents. The meaning of this variability is puzzling and requires a protocol to select the most reliable MI.
In this seminar, I present a protocol to select the most reliable MI associated to large database of MI from the literature. After applying this protocol, most reliable MI of single volcanic systems still show that the volatile contents span in a wide range. This systematics suggests that volatile-saturated magmas are common below volcanoes. However, the lack of relative age constrains on the MI formation hampers the interpretation of these data, highlighting the importance of creating a protocol for the interpretation of volatile contents recorded by MI





Esposito et al. 2016

Cashman et al. 2017

The Speaker

I'm working as researcher at the University of Milano-Bicocca. As a researcher, my mission is to better understand the volatile evolution associated magma in active volcanoes. To tackle this question I have used the melt and fluid inclusion technique. My last publication is a book chapter in a Special Topic Volume of the Mineralogical Association of Canada summarizing and proposing a new approach to interpret volatiles recorded by melt inclusion

As a teacher, my mission is to give support to the younger generations to access the wonderful world of science and in particular the Earth science. I use the pop culture to introduce geology to help better understand how geology is linked and connected with what is around you (arts, movies, songs, poetry, entertainments, politics, videogames, etc.). This is also to create a learning community in my courses, where everybody can bring in their cultural background and relate it to learning science and geology.