

Accepted Manuscript

Understanding a volcano through a droplet: A melt inclusion approach

C. Cannatelli, A.L. Doherty, R. Esposito, A. Lima, B. De Vivo

PII: S0375-6742(15)30078-9
DOI: doi: [10.1016/j.gexplo.2015.10.003](https://doi.org/10.1016/j.gexplo.2015.10.003)
Reference: GEXPLO 5646

To appear in: *Journal of Geochemical Exploration*

Received date: 29 January 2015
Revised date: 9 July 2015
Accepted date: 3 October 2015



Please cite this article as: Cannatelli, C., Doherty, A.L., Esposito, R., Lima, A., De Vivo, B., Understanding a volcano through a droplet: A melt inclusion approach, *Journal of Geochemical Exploration* (2015), doi: [10.1016/j.gexplo.2015.10.003](https://doi.org/10.1016/j.gexplo.2015.10.003)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Understanding a volcano through a droplet: a melt inclusion approach

Cannatelli C.^{1,*}, Doherty A.L.¹, Esposito R.², Lima A.¹ and De Vivo B.¹

¹ Dipartimento di Scienze della Terra, dell' Ambiente e delle Risorse, Università di Napoli Federico II, Italy

² Earth, Planetary and Space Sciences, UC Los Angeles, CA, USA

Corresponding author: claudia.cannatelli@unina.it

Keywords: melt inclusions, magma evolution, volatile content, igneous petrology

Abstract

This review paper is intended to be a guideline to novices on how to conduct research on silicate melt inclusions in volcanic environments, which analytical techniques are more suitable to gather the desired data and the major pitfalls scientist may encounter. Silicate melt inclusions (SMIs) are small quantities of silicate melt that are trapped in minerals during their growth or crystallization. They contain liquids formed in equilibrium with their host minerals and therefore record the liquid line of descent of magmatic systems. Upon trapping, SMIs become ideally closed to the surrounding environment, and behave as time capsules, giving important information about processes that originated magmas and the nature of their mantle source. A melt inclusions investigation is composed of several steps: (1) a detailed petrographic study to characterize and select representative SMIs, with the aim of identifying Melt Inclusions Assemblages (MIA), the only reliable tool to assess that SMIs obey Roedder's rules and have not re-equilibrated following entrapment; (2) a careful preparation of samples for re-heating experiments and microanalysis; (3) high temperature studies in

Download English Version:

<https://daneshyari.com/en/article/5754469>

Download Persian Version:

<https://daneshyari.com/article/5754469>

[Daneshyari.com](https://daneshyari.com)