

A preliminary evaluation of volatiles content in melt inclusion in monogenetic centers of the Central Andean Volcanic Zone (Northern of Chile)

C. GONZÁLEZ^{1*}, E.H. HAURI², A. SAAL³, J. WANG²
AND F. AGUILERA¹

¹Departamento de Ciencias Geológicas, Universidad Católica del Norte, Antofagasta, 1270709, Chile.

(*correspondence: cristobal.gonzalez@alumnos.ucn.cl)

²Department of Terrestrial Magnetism, Carnegie Institution for Science, Washington, DC 20015, USA

³Department of Earth, Environmental and Planetary Sciences, Brown University, Providence, RI 02912, USA

Volatiles in subduction zones are generated during metamorphism of the subduction of the Nazca oceanic lithosphere previously affected by hydrothermal alteration and seawater circulation [1, 2]. In the Central Andean Volcanic Zone (CAVZ) the regional tectonic setting and the heterogenous magma source have controlled the chemistry and isotopic composition of the erupted lavas [3, 4]. These factors could modify the distribution of volatiles along and across the arc (e.g. CAVA. Sadofsky et al., 2008). Across the CAVZ of Northern Chile, there are several Pliocene to Holocene monogenetic mafic centers associated to pyroclastic deposits: Ajata volcano, Porunita, La Luna de Tierra, Poruna and volcan del Inca scoria cones and Cerro Overo maar, with a range in magma composition from basaltic-andesite to andesite (SiO₂ 53.42 – 60.34 wt%) respectively. We picked Olivine-hosted melt inclusions from the pyroclastic material to determine the composition and distribution of volatiles (H, C, F, S, Cl) in the most primitive magmas. The olivine phenocrysts are subhedral to anhedral, varying from < 1 mm to ~200 μm. The distribution and size of melt inclusion varies between site. In general, they are ellipsoidal in shape with a major axis ranging from ~140 to 10 μm. The volatile contents of the melt inclusion were determined using the Cameca ims-6f at the Department of Terrestrial Magnetism, Carnegie Institution for Science. Our new data presents a large range in volatile contents H₂O (0.01 to ~3 wt%), CO₂ (1 to ~600 ppm), F (9 to ~4,500 ppm), S (12 to ~4,900 ppm) and Cl (10 to 3,500 ppm).

[1] Alt *et al.* (2012) *Annu. Rev. Earth Planet. Sci.* **327**, 50-60.

[2] Zellmer *et al.* (2015) *Geol. Soc. London Spec. Publ.*

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