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# Geochemistry of melt inclusions of Paraná-Etendeka Magmatic Province, Brazil

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The link between Continental Flood Basalts, extinctions, and environmental changes is mainly attributed to the effects of volcanic emissions, where the expelled volatile species have an important effect on atmospheric composition. It is highly probable that magmatic degassing is an insufficient killer mechanism, and an important additional volatile flux should be provided by alternative sources, as outgassing associated with contact metamorphism. Despite access to the volatiles released via interaction of magmas and sedimentary bedrocks is crucial, recognizing the original magmatic gases is the first step. Estimates on the volatile content of magmas erupted in the past commonly come from melt inclusions (MI), since most volatiles have low solubilities in magmas at atmospheric pressure, and therefore virtually all erupted lavas are degassed. Brazil hosts one of the world's most expressive CFB associated with the breakup of Gondwana Supercontinent and the opening of the Atlantic Ocean, the Paraná-Etendeka Magmatic Province. Some uncertainties prevent the concrete identification of volcanic activity as a trigger of environmental changes. In this context, this work contributes by investigating MI of the province aiming to explore the potential of using partially crystallized MI and their shrinkage bubbles to establish volatile content. MI of two silicic rocks samples (AS-350G and AS-367) were submitted to petrography, scanning electron microscope, microprobe, Raman spectroscopy, $fO_2$ using Miles et al., (2014) and thermobarometry. The results show that MI present in pyroxene and plagioclase megacrystals are rounded to oval (10 to 20μm), composed of a glassy matrix with dispersed nanocrystals, mostly clinopyroxene, and, frequently, apatite crystals, whose origin is interpreted as prior to the inclusion. Analysis reveal $H_2O$, Cl, and S. Most of the inclusions underwent degassing of sulfur at depth. The values obtained for Cl concentrations are slightly higher than previously recorded. MI also shows the presence of several shrinkage bubbles carrying volatiles (S and Cl). The apatite saturation temperature is 1269°C (AS-350G) and 865°C (AS-367) providing $fO_2$=δQFM +0.1 +0.4 and $fO_2$=δQFM +0.6, respectively. Samples define liquid lines descent indicating that the crystal has mostly trapped evolved liquids, with little potential to reveal the original volatile content of the magmas.