

Calibrating ELMO (Experimental Laboratory Magma Ocean)

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Volatiles and their chemical properties are a crucial part of many planetary processes. Detailed analysis of such processes requires *in situ* measurements, which are often challenging due to the limitations involved in mass spectrometry. Using a newly installed simultaneous thermal analyzer (STA), we are able to overcome these limitations. This will be used to investigate a variety of planetary systems, ranging from interactions between magma oceans and their atmospheres to surface processes on Mercury.

The current setup of the STA consists of a graphite furnace, which can maintain temperatures of up to 2000 °C within a high-vacuum ($<10^{-3}$ Pa) environment. Directly coupled to this is a quadrupole mass spectrometer (QMS) measuring the abundances of the released volatile species *in situ*. In addition, a microbalance tracks the mass loss of the sample throughout the experiment. Future applications will also allow for experiments under atmospheric pressures.

Here we present an overview of the experimental setup, as well as some preliminary results from basic chemical compounds.