

**Postgraduate Student Bursary
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Katharine Saunders,

**Victoria University of
Wellington, New Zealand**

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**Petrogenesis of the Whakamaru
supervolcano, New Zealand,
from *in-situ* micro-analytical
studies.**



Large-volume silicic volcanic eruptions have been described as supereruptions due to the immense power and destruction they cause. Although the products of these eruptions are preserved in the geological record, the process for super-sizing silicic magma bodies prior to these supervolcanic eruptions remains poorly understood. The Taupo Volcanic Zone (TVZ) – Kermadec Arc, New Zealand is the most active silicic volcanic region in the world making it an ideal setting to investigate the comparative petrogenesis of silicic magmas in both a continental and an oceanic arc setting.

During magma generation, processes such as crystallisation of mineral phases, assimilation and/or magma mixing change the composition of the silicate melt. This is recorded in both the composition of melt inclusions (pockets of melt trapped during crystal growth) and phenocrysts. Melt inclusions provide a unique insight into magma generation as they represent ‘snapshots’ of magma evolution. Changes in phenocryst composition provide a more continuous record of the magma evolution during growth and allow timescales for these processes to be estimated from diffusion modelling of trace elements through the crystal lattice. My PhD research focuses on *in-situ* micro-analytical (< 50 μm) techniques, of electron microprobe, laser ablation inductively coupled plasma mass spectrometry and Fourier transform infrared spectroscopy to investigate the petrogenesis of large-volume silicic magmas through melt inclusion and single crystal analyses.

The bursary I received from The Mineralogical Society contributed towards my flights, allowing me to attend the international Goldschmidt conference in Canada this year. This allowed me to present the major conclusions of my PhD in the Crystal Record of Magmatic Processes session. My participation in this conference allowed me to interact with other researchers in my field allowing me to exchange knowledge with researchers worldwide. This was a highly stimulating meeting and I am extremely grateful for the opportunity to attend and the funding I received from The Mineralogical Society.