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# Modelling the ascent of picritic lunar magmas

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Quantifying the volatile content of the lunar interior is valuable for understanding the formation, thermal evolution, and magmatic evolution of the Earth and Moon. Petrological modelling and geochemical measurements have been used to study the volatile composition of the lunar interior. Improvements to analytical instruments have facilitated more precise measurements of the volatile content of lunar samples and meteorites, however, several problems remain with these measurements, hence, the volatile content of lunar magmas has yet to be constrained with certainty. We propose a volcanological approach for inferring the volatile contents of different lunar magmas.

A terrestrial magma ascent model has been modified for lunar applications. Numerous parameters were adjusted for lunar conditions, including: magma major element composition, from low-Ti (green and yellow glasses) to high-Ti (orange, red, and black glasses); $H_2O$ content; CO content; gravity; and pressure. The model calculated values for gas exsolution, viscosity, mass flow rate, and several other ascent processes, from a depth of 10 km to the surface. Using these results, we will assess the effect of varying magmatic volatile content on lunar magma ascent processes. We will also compare and contrast our results with existing models for lunar magma ascent, as well as models for magma ascent on other planetary bodies. Future work will involve modelling eruptions, using results from the magma ascent model, and verifying the results of the models using images and digital elevation models of the lunar surface.