HARROW & HILLINGDON GEOLOGICAL SOCIETY

A Local Group of the Geologists' Association *Founded 1973*

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Volcano Lecture Series 2025

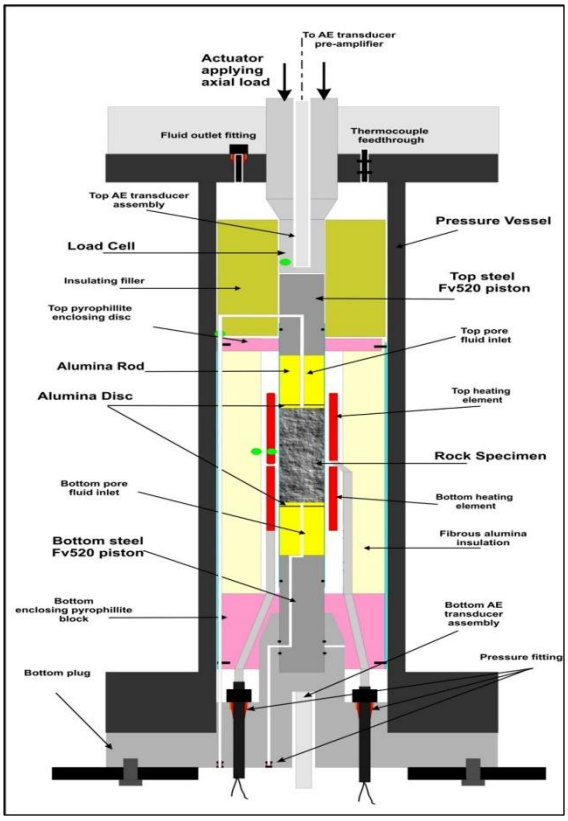
Non-members, please register by email: contact@hhgs.org.uk

Wednesday 9th April 2025 at 8pm on Zoom

"Simulating volcanic processes and understanding volcano dynamics through experiments"

By Dr. Liz Gaunt, NERC Independent Research Fellow,
(Department of Earth Sciences, University College London)

Understanding the inner workings of volcanoes and magmatic systems is key to developing more robust eruption forecasting models. As we cannot see inside volcanic conduits, the magmatic processes controlling how volcanoes erupt are obstructed from direct observations. The simulation of different processes occurring in volcanic conduits in a laboratory setting therefore provides a crucial window into the magmatic system. Using high temperature rock physics techniques, both natural and analogue samples can be subject to the same temperatures, pressures, fluid conditions and deformation processes that occur during magma ascent.



A fundamental driving force of volcanic eruptions is the volatiles dissolved within magma. Once exsolved, how these gases move through the magma and the processes that enhance or restrict this movement are key controls on how explosive eruptions will be. The application of fluid flow measurements under controlled experimental conditions allows for the movement of volcanic gases through magma to be investigated but more importantly quantified. However, the real strength of this method comes from combining this information with geophysical monitoring data and other petrological studies to provide a holistic view of different magmatic processes that lead up to eruptions.

Dr Liz Gaunt on fieldwork at Soufriere Hills Volcano, Montserrat

Dr Liz Gaunt at Reventador volcano in Ecuador