

FALL 2019 SEMINAR SERIES

From birth to death - bubbles during volcanic eruptions

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WHEN: October 11, 2019 1:00 PM - 2:00 PM

WHERE: Room 102D in the Engineering Building 1

ABSTRACT

Volcanic eruptions are driven by abundant magmatic volatiles, such as water, that become supersaturated in the magma and nucleate a myriad of bubbles upon ascent to the surface. Bubbles in the erupted magmas also provide records of subsurface conditions that are inaccessible to direct observations during volcanic eruptions. I will provide an overview of the role of bubbles during volcanic eruptions of silica rich magmas. These are magmas with viscosities that range from $\sim 10^4$ Pa.s at depth to $>10^8$ Pa.s near the surface and which produce eruptions that range from the most explosive eruptions on Earth to continuous lava effusion over periods of months or years. I will discuss the roles and unsolved problems associated with the 'birth' and 'death' of bubbles. The former is bubble nucleation, whereas the latter encompasses bubble coalescence and the loss of volatiles by permeable flow, as well as magma fragmentation during explosive eruptions.



BIO:

Helge Gonnermann is an associate professor in Rice University. He obtained his PhD in the department of Earth Sciences at Berkeley in 2004, after which he spent some time as a postdoc at Harvard and at the University of Hawai'i at Manoa. Dr. Gonnerman is a fluid dynamicist who uses modeling, field observations, and analog laboratory experiments to develop quantitative models describing the movement of magmas and volcanic eruptions.