

What causes “Pele’ s tear” in volcanic eruption?

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“Pele’ s tears” and “Pele’ s hairs” are volcanic glass products, which are formed by the breakup, stretching, and cooling of molten magma during their eruption. Their formation process is complicated, and their morphology depends on many parameters such as rheological properties of the volcanic glass, cooling rate, ejection speed, wind velocity, and so on. While we reported the analog experiment on the “Pele’ s hair” in the previous presentation, this year we will focus on the formation process of the “Pele’ s tear” . Through the simple analogue experiments on the cotton candy formation, we attempted to generate the “Pele’ s tear” like morphology and considered the formation process. The experiment was conducted in the cotton candy machine we reported last year. The melted sugar (the analogue of molten magma) was formed after heating the rotating disk and ejected through the outlets at its periphery. The flow behavior of the melted sugar jet was captured by a high-speed video camera, which helped us to understand the formation process. In this presentation, we’ ll consider how the difference in morphology between “tear” and “hair” occurs.

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