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Gelatin experiments on magma ascent and eruption for outreach program

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Analog experiments are useful for outreach program. We cannot see the inside of a volcano directly, though an eruption is caused by underground magma. I develop the see-through experiments to understand a process from magma system to eruption. Liquid-filled cracks are injected in gelatin under the stress field. We can examine the factors controlling magma ascent to eruption, such as density, viscosity, the physical properties of the earth, the stress field etc. I introduce several examples of the experiments: magma ascent to eruption, crack behaviors under the stress field, magma movement with bubbles, the crack interactions, two phase flows, crustal behavior in the liquid filled crack. These experiments were carried out at elementary schools, junior high schools, science museums, the open house in AIST, training course for school teachers in YIES, and lectures of university, the international training course of JICA, APEC, COV.

Keywords: outreach, volcanology, magma, eruption, analog experiment, dike