

See-through volcano; experiments of volcanic eruption for outreach program

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We develop the See-through experiments of volcano in order to observe the inside of a volcano which cannot be seen directly, and understand the process from magma system to eruption. We present instructions for three-type experimental volcano, carried out at the open house in AIST. (1) The first experiment is to observe the effect of bubble. The See-through volcano is built with a transparent plastic bottle covered by a transparent plastic sheet. First, one pours colored juice and dishwashing detergent, then put bicarbonate and citric acid (or bubble bath bomb) into the bottle, and put a cap with pipe immediately. The pressure inside the bottle increases with bubble generating, eruption will occur with about a 1-m high explosive column, and change into effusive flow. (2) The second is to observe the effect of bubble and buoyancy. The See-through magma system is installed in a plastic bag, and is sunk with glass beads in a water container. Colored juice without bubble is denser than water, but with bubble, the juice starts to rise and erupt. (3) The third is to observe the effect of stress of the host material. For this experiment, the see-through host material is made of gelatin in a container. One injects colored juice from the hole in the bottom of the container using a siphon. We can observe the juice rises laterally like dike injection, and fissure eruption at the gelatin surface. If one changes the stress with pushing the container, the shape of the dike changes to adopt it.

These experiments are participatory, friendly to kids and adults, and favorably for also girls maybe because the experiments like cooking in the kitchen.

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