

Investigation on lava tube cave located under the hornito of Mihara-yama in Izu-Oshima island

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Abstract: A lava tube cave recently found under the hornito of Mihara-yama in Izu-Oshima island was surveyed and investigated by the vulcano-speleological society. This lava cave was formed inside of 1951 eruption lava flow located at the edge of inner crater. The lava tube cave consists of a flat region and a sloped region whose total length is about 40m. Inside of the lava tube cave, general characteristics such as lava stalactites and lava benches can be found. Two important lava characteristics, yield strength and surface tension, were obtained from the observation of this lava tube cave. By using a simple model of steady state flow in circular pipe for analysis based on Bingham characteristics of lava flow in the tube (T. Honda, 2001) and from the height and slope angle of the lava tube on the sloped region, the yield strength of the lava can be obtained as 50000 dyne/cm². This value is very near to the value calculated as 43000 dyne/cm² by G. Hulme (1974) for 1951 eruption lava flow configuration observed by T. Minakami (1951). From the pitch of lava stalactite on the roof surface (3 to 4 cm), the surface tension of lava was determined as 600 to 1000 dyne/cm. This value is a reasonable value obtained by I. Yokoyama in the melting lava surface tension measurements in Laboratory.