Viscosity of Martian magmas at high temperatures

shizu kasai[1], Akio Goto[2], Eiji Ohtani[3], Hiromitsu Taniguchi[4], Tadashi Kondo[5]

[1] Inst. of Mineralogy, Petrology and Economic Geology, TOHOKU Univ., [2] CNEAS, [3] Institute of Mineralogy, Petrology, and Economic Geology, Tohoku University, [4] CNEAS, Tohoku Univ, [5] Sci., Tohoku Univ.

. In this study, we measured the viscosity of Martian magmas at high temperatures.

Compositions of starting materials are those measured at the Mars Pathfinder landing site (McSween et al. 1999). We chose two compositions from them. One (MPW) is the basaltic composition richest in TiO2, and with the other (MPS) is the andesite with richest in SiO2.The viscosities were measured by the counter-balanced sphere method.

Viscosity of MPW is 280Pa s at 1200ºC, 39Pa s at 1350ºC. Calculated viscosities of the same composition using the method by Shaw (1972) is much smaller than the preset values. The same relation hold in viscosities of MPS. We will discus about the cause of the differences between measured and calculated values, and the effect of magma composition on viscosities.