

In situ viscosity measurement of Diopside-Jadeite melt at high pressure

Akio Suzuki[1], Eiji Ohtani[2], Makoto Maeda[3], Jin Satoh[4], Hidenori Terasaki[5], Kenichi Funakoshi[6]

[1] Faculty of Science, Tohoku Univ., [2] Institute of Mineralogy, Petrology, and Economic Geology, Tohoku University, [3] Institute of Mineralogy, Petrology, and Economic Geology, Tohoku Univ., [4] Geology, Tohoku Univ., [5] Geosci., Univ. of Tsukuba, [6] JASRI

Viscosity of silicate melt in diopside₅₀jadeite₅₀ composition was measured with falling sphere method using X-ray radiograph. An X-ray CCD camera (C4880, Hamamatsu Photonics Co.) was used to observe the sample, and High pressure experiments were carried out using a Kawai (MA-8) type multi-anvil apparatus, which is driven by a DIA-type guide block in a uniaxial press (SPEED1500). Density of melt was estimated by molecular dynamics simulation using an interatomic potential model by Matsui (1998). The MD basic cell contained 3000 atoms, and the calculation was carried out in 100 ps.

The experiments were carried out from 3.0 to 7.9 GPa. The slightly positive dependence of viscosity was confirmed at 1800 and 1900 degree Celsius up to 7.9 GPa.

Viscosity of silicate melt in diopside₅₀jadeite₅₀ composition was measured with falling sphere method using X-ray radiograph. An X-ray CCD camera (C4880, Hamamatsu Photonics Co.) was used to observe the sample, and High pressure experiments were carried out using a Kawai (MA-8) type multi-anvil apparatus, which is driven by a DIA-type guide block in a uniaxial press (SPEED1500). Density of melt was estimated by molecular dynamics simulation using an interatomic potential model by Matsui (1998). The MD basic cell contained 3000 atoms, and the calculation was carried out in 100 ps.

The experiments were carried out from 3.0 to 7.9 GPa. The slightly positive dependence of viscosity was confirmed at 1800 and 1900 degree Celsius up to 7.9 GPa.