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# Chemistry of fluids in various part of subduction zone: an experimental approach

Eiichi Takahashi[1*]

[1]Earth and Planet. Sci, Tokyo Inst. Tech.

Many experimental studies have been carried out, in order to understand the composition of fluids derived from subducting oceanic plate. Most of the studies so far have concentrated on trace elements that characterize geochemical role of fluid in subduction zone magmatism (e.g. Kogiso et al.1997; Kessel et al., 2005). Major element composition (Cl, etc.) of the fluids that determine physical property (i.e., electrical conductivity, dihedral angle, permeability) remains uncertain. According to Kazahaya (this session), Arima-type brine (characterized by high salinity, high CO2 concentration and high 3He/4He ratio) are distributed along Median Tectonic Line and some areas near volcanoes where characteristic low frequency earthquakes occur in the lower crust. According to Tsukahara (this session), earthquake swarm in Matsushiro (1965-70) accompanied with large emission of Arima-type brine probably derived from one of a S-wave scattering bodies located in the crust 10~15km depth (Hasegawa, this session). Very high electrical conductivity layer found in the middle crust (Ogawa, this session) is difficult to be explained neither by magma or graphite but may represent the presence of Arima-type brine in the middle crust (Yoshino, this session). In order to understand the origin of Arima-type brine and clarify major element composition of fluids in various part of subduction zone, an experimental study is undertaken using internally heated Ar-gas vessels (UHP-5000, UHP-8600) at the Magma Factory, Earth and Planetary Sciences, Tokyo Institute of Technology. Major element composition of fluids in equilibrium with peridotite, granitic melt, gabbro and metasediments are determined with analysis of quenched run products using diamond-trap technique.

Keywords: geofluid, major element composition, high-pressure experiment, Arima-type brine, subduction zone