[EE] Evening Poster | S (Solid Earth Sciences) | S-IT Science of the Earth's Interior & Tectonophysics

[S-IT22]Interaction and Coevolution of the Core and Mantle in the Earth and Planets

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Recent observational and experimental investigations have significantly advanced our understanding of the structure and constituent materials of the deep Earth. Yet, even fundamental properties intimately linked with formation and evolution of the planet, such as details of the chemical heterogeneity in the mantle and light elements dissolved in the core, remained unclear. Seismological evidence has suggested a vigorous convection in the lower mantle, whereas geochemistry has suggested the presence of stable regions there that hold ancient chemical signatures. The amounts of radioactive isotopes that act as heat sources and drive dynamic behaviors of the deep Earth are also still largely unknown. We provide an opportunity to exchange the achievements and ideas, and encourage persons who try to elucidate these unsolved issues of the core-mantle evolution using various methods, including high-pressure and high-temperature experiments, high-precision geochemical and paleomagnetic analyses, high-resolution geophysical observations, geo-neutrino observations, and large-scale numerical simulations. Since this session is co-sponsored by geomagnetism, paleomagnetism and rock magnetism division of the SGEPSS, contributions in geomagnetism and geodynamo simulation are also encouraged.

[SIT22-P06]Sound velocity measurements on bridgmanite at lower mantle pressures

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The chemical composition of the lower mantle which occupies more than half of the Earth’s volume is of great importance to understand the dynamics and the formation process of the Earth. The sound velocity of bridgmanite at high pressures reveals the mineralogy model and the chemical composition of the lower mantle, comparing with data from seismic observation. Here, we measured the longitudinal wave velocity of iron (Fe) and aluminum (Al) bearing bridgmanite at lower mantle pressures by a new method via a combination of the femtosecond pulse laser pump-probe technique with a DAC (Wakamatsu et al., 2018). In this presentation, we will compare our data of sound velocity in bridgmanite with those reported in previous studies (Murakami et al., 2012; Chantel et al., 2012; Kurnosov et al., 2017) and discuss the mineralogy model and the chemical composition of the Earth’s lower mantle.