
[EE] Evening Poster | S (Solid Earth Sciences) | S-MP Mineralogy & Petrology

[S-MP34]Oceanic and Continental Subduction Processes

convener: REHMAN Ur Hafiz (Department of Earth and Environmental Sciences, Graduate School of Science and Engineering, Kagoshima University), Tatsuki Tsujimori (Tohoku University), Chin Ho Tsai
 Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

This international session aims at bringing earth scientists from Japan and overseas to present their research related to the processes of oceanic and continent subduction, continent-continent collisions, metamorphism of crustal rocks, formation of the oceanic/continental arcs, and accretion/ tectonic erosion of material along subduction boundaries.

Topics such as role of the fore- and back-arcs in the subduction zones, process of accretion of volcanoclastic and terrigenous sediments along the subduction/collision boundaries, deformation and metamorphism of subducted crust, recycling of material via tectonic erosion and exhumation will be the main focus of the session. Exchange of ideas among geoscientists applying different approaches on problems related to the theme of the session are most welcome.

[SMP34-P05]Boron isotope systematics of forearc serpentinites: A case study from the California Coast Ranges

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 Keywords:serpentine, forearc serpentinite, boron isotope, spot analysis, Franciscan Complex, LA-MC-ICPMS

Recently, Martin et al. (2016) characterized two contrasting origins of serpentinite in central Guatemala. They proposed an idea that the tectonic origin of serpentinites can be discriminated based on boron isotopic signature. In order to test the result by Martin et al. (2016), various serpentinites from the Franciscan Complex of Northern California were investigated using in-situ spot analytical technique that had newly developed by Kimura et al. (2016). The investigated twenty serpentinites include sheared serpentinite, massive serpentinite (or serpentinitized peridotite), and serpentine veins cutting fresh peridotite. The occurrences of these serpentinites are classified into serpentinite lenses within Franciscan metagreywacke, blueschist-bearing serpentinite diapir, massive serpentinitized peridotite body, extremely fresh peridotite body, and various serpentinites along the San Andreas Fault. We have tested both mineralogical variations (lizardite/chrysotile vs antigorite) and textural variations (pseudomorph vs non-pseudomorph). We also made a mineralogical assessment on relict mantle minerals in serpentinites. Our study found a large variation of boron isotope ($\delta^{11}\text{B}$) ranging from -12.0 to +24.4‰; and boron concentrations ($B=3.0\text{--}239\ \mu\text{g/g}$). Our observations together with geological context support Martin et al. (2016)'s observation in central Guatemala; in other words, boron isotope is useful for tectonic discrimination of serpentinites. In this abstract, we will introduce petrologic and geochemical diversity of forearc serpentinites in California Coast Ranges, and we also present a new insight of isotope correlations among various aspects.