
[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-P07]Relict chromian spinels in serpentinites of the Yuli belt, eastern Taiwan: compositional characteristics and geologic implications

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Ultramafic rocks are important for deciphering geodynamic evolution of orogenic belts. The Yuli metamorphic belt has been the most crucial topic in regional tectonics of eastern Taiwan in recent years (Tsai et al., 2013; Brown et al., 2015; Keyser et al., 2016; Chen et al., 2017). Four major serpentinite-bearing tectonic blocks crop out in Fengtien, Wanjung, Juisui, and Chinshuichi areas in this elongated metamorphic belt. High-pressure (HP) rocks of unusual bulk compositions occur in some of the blocks and have been well characterized and dated. However, serpentinites are surprisingly not studied in detail yet. We investigated serpentinites in the Juisui and Chinshuichi areas. Metasomatic zones commonly occur between serpentinites and surrounding metasediments. We discovered chromian spinel (Cr-spinel) relics in some of the serpentinite samples, which consist mainly of antigorite and magnetite, with secondary chrysotile and calcite. The relict reddish-brown Cr-spinel is replaced by opaque ferritchromite and magnetite. Cr-spinel compositions are characterized by different groups of Cr# [= Cr/(Cr + Al) atomic ratio], Mg# [= Mg/(Mg + Fe²⁺) atomic ratio] and TiO₂ content. Type I Cr-spinel shows moderate Cr# (0.48-0.58), relatively high Mg# (near 0.7), and very low TiO₂ (< 0.02 wt.%), whereas Type II shows high Cr# (up to 0.8) and relatively low Mg# (< 0.6), but relatively high TiO₂ (0.02-0.28 wt.%). We tentatively interpret that Type I might be of abyssal peridotite protolith origin and Type II of forearc (mantle wedge) origin. Therefore, serpentinites from the Yuli belt are likely of multiple origins in terms of protolith tectonic setting. They might have been incorporated into a subduction channel (or accretionary prism) and mixed with pelitic and psammitic sediments before metamorphism and serpentinization.