
[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-P02]Origin and metamorphic evolution of corundum (or kyanite)-bearing amphibolites from the Paleoproterozoic Usagaran belt, Tanzania

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Occurrence of Paleoproterozoic eclogitic rocks have been known in the Usagaran belts of Tanzania. Due to severe retrogression and high-variance mineral assemblage of eclogitic rocks, however, the regional metamorphism is not fully constrained. In order to better understand the metamorphism, we studied corundum (or kyanite)-bearing aluminium-rich amphibolites occurring near the locality of Paleoproterozoic eclogitic rocks. The amphibolites are characterized by the mineral assemblage of Ca-amphibolite + kyanite + corundum + talc + garnet + plagioclase + quartz. Bulk-rock major and trace elements geochemistry of the investigated three samples suggest that the protolith was troctolitic or anorthositic cumulates; they have high values of normative plagioclase and olivine, and show a negative correlation between Ni and Sr, and positive Eu and Sr anomalies in spidergram. The presence of talc + kyanite and the abundance of cordierite and yoderite indicate the minimum pressure of a peak metamorphic condition of $P > 1.1 \text{ GPa}$ and $T = 700\text{--}850^\circ\text{C}$. In a quartz-bearing sample, kyanite contains precursor corundum as inclusion. Relict orthopyroxene was found in a plagioclase-rich sample. Our petrological study indicates that the amphiboles recorded a metamorphic trajectory from low-pressure granulite-facies (or igneous) stage, where orthopyroxene was stable, to a high-pressure stage characterized by the mineral assemblage talc + kyanite + garnet. Bulk-rock compositions, P-T pseudosection analyses and the talc + kyanite stability suggest that the studied amphibolites formed by a collision/subduction of the Archean continental crust at a high-pressure granulite-facies condition rather than eclogite-facies. Such a high geothermal gradient is an indicative of hot subduction-zone geotherm in Paleoproterozoic.