[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 volcaniclastic 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-P04]Mineral replacement under the presence of trace H₂O: Jadeite (NaAlSi₂O₆)–spodumene (LiAlSi₂O₆) reaction at 700℃ and 2 GPa

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Mineral replacement is a fundamental reaction process involved in diagenesis, metamorphism and metasomatism. In order to determine the mechanism of mineral replacement without free H_2O fluid phase, a jadeite (NaAlSi₂O₆) crystal was placed in spodumene (LiAlSi₂O₆) powder and heated at 700°C and 2 GPa for 72 h using a piston-cylinder apparatus. In the experiments, the natural single crystal of jadeite from the New Idria, California with a grain size of ~1W mm × 1D mm × 2H mm was placed in the platinum capsule with fine spodumene powder having particle sizes of several μm. Polished cross sections of the run products were investigated with a SEM–EDS. At the reaction interface, we found a thin porous layer ~100 μm in width having a composition of 90 mol% jadeite and 10 mol% spodumene component, instead of a smooth gradual compositional profile. This is interpreted as a result of dissolution and precipitation reaction rather than diffusive chemical exchange. Although free water was not added into the experimental system, the starting material of natural jadeite crystal contains trace hydrous components (OH or H_2O) of up to 1000 ppm as hydroxyl and fluid inclusions. The trace amount of hydrous components might have worked as a solvent. Our experimental data imply relatively rapid mineral replacement reaction may occur in a 'wet' subsolidus system.