
 [EE] Evening Poster | S (Solid Earth Sciences) | S-CG Complex & General

[S-CG54]Hard-Rock Drilling: Oman to Oceanic Lithosphere to Island Arc Formation and Beyond

convener: Eiichi TAKAZAWA (Department of Geology, Faculty of Science, Niigata University), Katsuyoshi Michibayashi (Department of Earth and Planetary Sciences, Nagoya University), Peter B Kelemen (共同), Damon A H Teagle (Ocean & Earth Science, National Oceanography Centre Southampton, University of Southampton, SO14-3ZH, Southampton, UK)

Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall 7, Makuhari Messe)

The on-going Oman Drilling Project (OmDP) has drilled numerous hard-rock cores of ancient oceanic lithosphere and the underlying subduction zone of the Samail ophiolite in Oman, with support from ICDP, IODP, the Sloan Foundation's Deep Carbon Observatory, and Japanese, US, and European research agencies. Moreover, a number of IODP expeditions have focused on hard-rock drilling over the last 5 years including Expedition 352 in 2014, which drilled the volcanic sequence associated with subduction initiation in the Bonin fore-arc, Expedition 357, which drilled the Lost City hydrothermal field, Expedition 360, which drilled the lithosphere associated with ultraslow-spreading at the Southwest Indian Ridge in 2016, and Expedition 366, which drilled the serpentinite seamounts in the Mariana fore-arc. In this session, we invite presentations on the scientific results of hard-rock drilling at these and other sites. We also invite related presentations on oceanic lithosphere, island arc formation, and any other significant issue that could be addressed by future hard-rock drilling. This includes marine studies of oceanic lithosphere and on-land geological investigations of ophiolites, accreted arcs, and subduction complexes. The session is intended to be interdisciplinary, including the fields of geophysics, geochemistry, petrology, engineering, and biology.

[SCG54-P05]Lithological and petrophysical variation of the lower crustal section from the ICDP Oman drilling project Holes GT1A and GT2A

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Oman Ophiolite is one of the best-preserved ophiolite in the world and the type locality of oceanic lithosphere. ICDP Oman Drilling Project (OmDP) drilled ~100% core recovery of continual lower crustal section in Hole GT1A (22°N, 53.535°E; 403.7 m depth) and GT2A (22°N, 51.793°E; 406.77 m depth). These cores were cut in half and conducted on-board description on D/V CHIKYU during July-August 2017. Igneous and alteration petrologists, structural geologists, geochemists, physical property specialists and paleomagnetists got a series of core description.

Both GT1A and GT2A cores consist of ~65% of olivine gabbro, ~25% of olivine-bearing gabbro and olivine melagabbro. Minor rock types are anorthositic gabbro, troctolitic gabbro, orthopyroxene-bearing gabbro, gabbro-norite, dunite, gabbro, gabbro-norite, varitextured gabbro, troctolite, and troctolitic gabbro. Intercalation of minor rock types into major rock types exhibits "layering";

structure, but also major rock types show layering and foliation consist of mineral size, mode and structure.

Variable layering and foliation intensity is common feature of the lower crust, but it is difficult to describe it standardize due to the thickness changes from <mm to meter order. We tried to use magnetic susceptibility (MS), luminance value (L^* , a^* , b^*) of the archive half cores measured by Multi-Sensor Core Logger with 2 cm step interval. Generally, MS and luminance are sensitive in olivine mode and alteration, respectively.