



**ICDP Workshop on Scientific Drilling of the Samail ophiolite, Sultanate of Oman:
Past and present processes in crust and mantle from an oceanic spreading center**

Palisades NY, 13-17 September 2012

The Samail ophiolite in the Sultanate of Oman and the United Arab Emirates has long been the type-area for field studies that address the nature of tectonic, igneous and metamorphic processes at submarine spreading centers. Recently, this emphasis has been supplemented by intense interest in ongoing alteration of mafic and ultramafic lithologies, particularly with regard to their role in CO₂-uptake via mineral carbonation, abiotic hydrocarbon synthesis, and the subsurface biosphere. Studies of both past and current processes require quantitative study of continuous core and boreholes, in order to quantitatively resolve key questions about the spatial scale, variability, and average proportions of fluid flow, fractures, veins, pervasive alteration, shear zones, igneous chemical layering, and ductile deformation fabrics.

We invite participants to join us in preparing a full proposal to the International Continental Drilling Program (ICDP) at a workshop in Palisades, NY, 13-17 September, 2012. Diamond drilling with continuous coring, plus downhole logging and experiments, will be planned to address scientific objectives related to (from low temperature to high temperature)

- ongoing weathering: fluid composition, serpentinization, carbonate formation, oxidation
- ongoing deformation: volume change, fracture processes and ongoing fracture frequency
- hydrology in fractured, altered ophiolite lithologies: multi-scale permeability, fluid fluxes
- sub-surface biosphere in peridotite and mafic lithologies
- abiotic hydrocarbon synthesis during water-rock reaction
- hydrothermal alteration during ophiolite genesis and emplacement: nature and proportions
- cooling history of crust and shallow mantle at submarine spreading ridges
- processes of igneous accretion of oceanic crust at spreading ridges: chemical variation
- nature of key boundaries: dike/gabbro and crust/mantle transition zones
- pattern of high temperature deformation in the lower crust and upper mantle
- nature and evolution of the bulk composition of the crust and shallow mantle

For more information the workshop proposal and the report from the 2011 Mineral Carbonation Workshop in Oman are both available at

<http://www.ldeo.columbia.edu/gpg/projects/icdp-workshop-oman-drilling-project>

The workshop proposal outlined a preliminary plan for two phases of drilling, with approximately four holes in a first phase, and - contingent on successful completion of phase one - approximately ten more holes in a second phase. The preliminary plan involved the use of wireline diamond drilling equipment and personnel currently active in mineral exploration in Oman, with relatively low costs and with depth per hole limited to about 600 meters. Very preliminary drill sites were chosen in the southern ophiolite massifs, thought by many workers to have a simpler history and structure compared to the northern massifs.

ALL of these topics will be open for discussion by participants, and could be significantly revised as an outcome of the workshop. The workshop will be limited to 60 participants. If you are interested in attending, please complete the application form at

<http://www.ldeo.columbia.edu/gpg/projects/icdp-workshop-oman-drilling-project>

Applications will be reviewed and participants chosen beginning in late April and continuing until the venue is full. Email announcements with more details will follow, and conference information will be posted at the website above. A steering committee consisting of Peter Kelemen (US), Ali Al Rajhi (OM), Margot Godard (FR), Benoit Ildefonse (FR), Jürgen Koepke (GE), Chris MacLeod (UK), Craig Manning (US), Katsu Michibayashi (JP), Sobhi Nasir (OM), Everett Shock (US), Eiichi Takazawa (JP) and Damon Teagle (UK) will help in selecting participants and choosing keynote speakers. This workshop is sponsored and funded in part by the International Continental Drilling Program (ICDP). Support from ICDP will be used to reduce the meeting cost for everyone, to ensure broad international representation, and to enable early career scientists to participate. We are arranging relatively low cost, group transportation from New York airports to the Conference Center. We do not yet know how much financial support we will be able to offer. There are some indications from both European and US agencies that support may be limited. We hope that as many participants as possible will provide their own funds for travel and conference fees, and will support attendance by younger colleagues. Workshop costs (meeting facilities and three meals a day, Friday through Sunday) will be about \$200 per person. Lodging at the Conference Center is recommended, and is available for \$129 per person per night (single rooms only). A limited amount of less expensive lodging is available in the area, but reservations and transportation arrangements for off-site lodging will be the responsibility of individual participants.

Please direct questions to Karen Benedetto <karenb@ldeo.columbia.edu>.

We hope to see you there.