Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

SCG07-03 会場:106 時間:5 月 21 日 09:45-10:00

Inclusion mineralogy in extreme thermal conditions and its implication to the evolution of deep continental crust
Inclusion mineralogy in extreme thermal conditions and its implication to the evolution of deep continental crust

Kaushik Das[1*], Sankar Bose[2], Naotaka Tomioka[3], Jun-ichi Ando[1]
Kaushik Das[1*], Sankar Bose[2], Naotaka Tomioka[3], Jun-ichi Ando[1]

[1]Hiroshima University, [2]Presidency University, India, [3]ISEI, Okayama University
[1]Hiroshima University, [2]Presidency University, India, [3]ISEI, Okayama University

The history of recycling of shallow crustal material to deep crust and its return journey to the shallower depths is recorded in the high-grade metamorphic rocks, in particular those suffered extreme conditions of crustal metamorphism. The study of such rocks provides important information regarding the overall evolution of continental crust and physico-chemical processes operative during orogenesis. However, the record of the early part of this evolutionary history is often blurred due to faster reaction kinetics during the prograde history. The melt-generated at the deep crustal interior and their relative mobility from the protolith is considered to be one of the factors of preservation of near-peak metamorphic assemblages. Nevertheless, our experience shows that major portion of the deep crustal metamorphosed rocks is mostly retrogressed, though some patches of ”preserved” near-peak assemblages do exist. Hence, major information of tectonothermal evolution reconstructed from rocks of particular bulk composition (*e.g.*, aluminous metapelitic granulite) is mostly restricted from peak to post-peak metamorphic conditions.

However, evidences of near-peak to pre-peak metamorphic conditions are rare in granulites, particularly those suffered extreme thermal conditions of metamorphism at deep continental crust. Reconstruction of this prograde history is important to understand the overall tectonic evolution of the deep crust. Careful studies of high temperature to ultra-high temperature granulites, in recent years reveal that the porphyroblastic phases produced at near-peak conditions can include many coexisting to preexisting mineral phases. Detailed microscopic to submicroscopic textural analyses and mineral chemical characteristics of these included phases and intergrowths provide important information regarding the pressure-temperature-fluid conditions of the early metamorphic history *i.e.*, part of prograde to peak metamorphic conditions. Garnet and orthopyroxene porphyroblasts in aluminous granulites and their included phases as well as inclusions in zircon grains proved to be extremely helpful in this regard.

キーワード: Inclusions in porphyroblasts, Retrieving early metamorphic history, HT-UHT granulites
Keywords: Inclusions in porphyroblasts, Retrieving early metamorphic history, HT-UHT granulites