Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SCG62-P01 会場:コンベンションホール 時間:5 月 22 日 17:15-18:15

Fluor-wagnerite as a petrogenetic indicator: first occurrence from the Eastern Ghats Granulite Belt, India

Fluor-wagnerite as a petrogenetic indicator: first occurrence from the Eastern Ghats Granulite Belt, India

Kaushik Das[1*], Naotaka Tomioka[2], SANKAR BOSE[3], Jun-ichi Ando[1]
DAS, Kaushik[1*], TOMIOKA, Naotaka[2], BOSE, SANKAR[3], ANDO, Jun-ichi[1]

[1]Department of Earth and Planetary System Sciences, Hiroshima University, [2]ISEI, Okayama University, Misasa, [3]Department of Geology, Presidency University, Kolkata, India
[1]Department of Earth and Planetary System Sciences, Hiroshima University, [2]ISEI, Okayama University, Misasa, [3]Department of Geology, Presidency University, Kolkata, India

Accessory mineral phases in deep-crustal granulites often preserve plethora of information regarding the pressure-temperature-fluid evolution of the crust undergoing orogenesis. Their presence in different bulk compositions in granulites offer significant inputs to reconcile the *P-T* histories, as minor components present in these accessory phases may play crucial effects on the topology of petrogenetic grids. One such minor component is fluorine which is accommodated within accessory minerals and hydrous minerals in metapelitic granulites of 'appropriate' bulk compositions. Apatite is one of the common minerals that contain fluorine. On the other hand, wagnerite is rare phosphate mineral reported from some metapelitic granulites in different regional granulite terranes of the world.

The Eastern Ghats Belt of India evolved in phases in response to Proterozoic orogeneses in the span of c. 1.80-0.50 Ga. The high-temperature to ultrahigh temperature (UHT) granulites of this belt were retrogressed after emplacement to mid-crustal level as deduced from *P-T* history. Metamorphic fluid played an important role throughout this journey and its presence is characterized from mineralogical, theoretical and fluid inclusion analyses. Although wagnerite was previously reported from this belt, its composition is hydrous as presence of vapor fluid was interpreted to be responsible for its stability at the retrogressive stage of evolution. We report for the first time, presence of fluor-wagnerite in peak metamorphic porphyroblastic assemblages as well as retrograde matrix assemblages from Eastern Ghats Belt and explore its implication for the different stages of evolution of the lower crust. Fluor-wagnerite crystals develop inside garnet porphyroblasts of aluminous granulites as well as in the quartzofeldspathic matrix. Based on EPMA data and Micro-laser Raman analyses, we document an unusual high-Mg-F-rich chemistry of the mineral. Abundance of F over H_2O implies brine-rich nature of the fluid which was earlier inferred from F-rich nature of phlogopite crystals from this belt. Apatite is characteristically absent in the primary assemblages containing wagnerite, except a very late occurrence decomposing the matrix wagnerite grains. We propose that, given the 'suitable bulk and fluid chemistry', fluor-wagnerite can occur as a common accessory mineral in lower-mid crustal rocks, and fluorine should be taken into consideration while reconciling the P-T grid in the higher temperature side of biotite-dehydration melting curve.

キーワード: Fluor-wagnerite, UHT granulites, EGB, India
Keywords: Fluor-wagnerite, UHT granulites, EGB, India