2007 Fall Meeting
Search Results

Cite abstracts as **Author(s) (2007), Title, *Eos Trans. AGU*, *88*(52), Fall Meet. Suppl., Abstract xxxxx-xx**

Your query was:
"T11C-0734"

The selected databases contain **one** document matching your query:

HR: 0800h
AN: **T11C-0734**

Subduction of Subarc Mantle Peridotites: Evidence From the Higashi-akaishi Garnet- peridotites in the Sanbagawa Metamorphic Belt, Japan

AU ***Hattori, K H**
EM *khattori@uOttawa.ca*
AF *University of Ottawa, Department of Earth Sciences, Ottawa, ON K1N 6N5, Canada*
AU **Wallis, S**
EM *swaqllis@eps.nagoya-u.ac.jp*
AF *Nagoya University, Department of Earth Sciences, Nagoya, 464-8602, Japan*
AU **Enami, M**
EM *enami@nagoya-u.jp*
AF *Nagoya University, Department of Earth Sciences, Nagoya, 464-8602, Japan*
AU **Mizukami, T**
EM *miz@nagoya-u.jp*
AF *Nagoya University, Department of Earth Sciences, Nagoya, 464-8602, Japan*

AB Garnet-bearing peridotites have been reported from continental collision zones, but are very rare in oceanic subduction complexes. So far reported examples are boulders in a stream in northern Dominican Republic (Abbot et al., 2006) and a kilometer-scale unit of garnet peridotites (2 x 5 km) at Mt. Higashi-akaishi in the Sanbagawa belt in the southwestern Japan. The Sanbagawa belt formed during the oceanic subduction along the eastern Asian margin in Cretaceous time. The metamorphic history of the peridotites in the Sanbagawa belt has been well established by previous work, but the protolith is contentious. Proposed origins include cumulates of mafic magmas, mantle wedge peridotites, and the base of an oceanic plateau. The Higashi-akaishi peridotite body is composed mostly of anhydrous Ol-rich rocks with minor lenses of Cpx- rich rocks. Ol-rich rocks show a refractory geochemical signature with high Cr (>3000 ppm), MgO(>43 wt%)and Ir-type PGE(>5ppb) with low Al2O3(<0.5 wt%), and TiO2 (<0.05 wt%). Their refractory nature is further supported by high Cr# (>0.75) in spinel and high Mg (Fo=90-93) in Ol, which plot in the refractory part of the Ol-Sp mantle array. Cpx-rich rocks contain low Ni (<1000 ppm), low Ir-type PGE (< 2ppb) and show a typical "subduction-related signature· with high fluid-mobile elements and low HFSE, suggesting that Cpx- rich rocks are cumulates of arc magmas. Considering that the rocks had underwent a sharp increase in P from less than 2 to greater than 4 Gpa during the prograde metamorphism (Enami et al., 2004), we suggest that they originated in

the root of an arc at the depth greater than 50 km. The sliver of the subarc mantle peridotites was entrained by a mantle flow towards the trench, incorporated into the Sanbagawa subduction channel and subducted to a deeper than 100 km depth before exhumation. Such major mantle corner flow is compatible with the lack of a lubricating serpentinite layer during early high-temperature subduction. The condition may have been maintained by massive eastward flow of asthenospheric mantle from the northeastern Asia in Cretaceous time when the Sanbagawa belt began to form.

DE: 3613 Subduction zone processes (1031, 3060, 8170, 8413)
DE: 3654 Ultra-high pressure metamorphism
DE: 8104 Continental margins: convergent
DE: 8162 Rheology: mantle (8033)
DE: 8170 Subduction zone processes (1031, 3060, 3613, 8413)
SC: Tectonophysics [T]
MN: 2007 Fall Meeting

New Search