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:
"V43B-1371"

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

HR: 1340h
AN: **V43B-1371**
TI: Formation of Garnet Orthopyroxenites and Mobility of Siderophile and Chalcophile Elements in the Subcontinental Lithospheric Mantle During Metasomatism by Asthenospheric Mantle- derived Melt Below the Southern South America

*AU: **Wang, J**
EM: *jian.wang1205@gmail.com*
AF: *University of Ottawa, Department of Earth Sciences, Ottawa, ON K1N 6N5, Canada*
AU: **Hattori, K H**
EM: *khattori@uOttawa.ca*
AF: *University of Ottawa, Department of Earth Sciences, Ottawa, ON K1N 6N5, Canada*
AU: **Stern, C**
EM: *Charles.Stern@Colorado.EDU*
AF: *University of Colorado at Boulder, Department of Geological Sciences, Boulder, CO 80309, United States*

AB: Garnet-bearing orthopyroxenite is common as discrete mantle xenoliths and veinlets in peridotite xenoliths brought to the surface by the Quaternary Pali Aike basalts, the southernmost Patagonian plateau basalt field in South America. Orthopyroxenites commonly contain Ti-rich minerals and relict grains of Ol or rare Cpx as inclusions in secondary Opx (>85 % vol). The secondary Opx contains high TiO_2 (0.20-0.59 wt%), moderate Al_2O_3 (2.8-5.1 wt%) and low Mg# (0.84-0.89) compared with Opx in garnet-bearing peridotites. This suggests that secondary Opx formed at the expense of Ol during metasomatism by a Ti-rich evolved melt. Secondary Opx formed from Ol through reaction with slab-melt or fluid has been documented in sub-arc mantle peridotites. In contrast with such Opx in subarc mantle samples, secondary Opx in the Pali Aike orthopyroxenites contains high Ti and Al and low Mg. High Ti and low Mg in our samples reflect the evolved nature of the metasomatizing melt that originated from the underlying asthenospheric mantle. This type of orthopyroxenite may be common elsewhere in the SCLM affected by asthenospheric upwelling. The orthopyroxenites contain similar bulk-rock concentrations of Cr, Ni and PGE as do the peridotites, suggesting that these metals were essentially immobile during this type of metasomatism, and that the metasomatizing melt did not introduce these elements into the mantle. Instead, the metasomatizing melt contributed alkalis, Ti, Si, Cu, and S to the orthopyroxenites. The evolved metasomatizing melt was saturated with S and introduced immiscible sulphide liquid containing Cu and S to the orthopyroxenites. The contents of PGE are independent of S and they are most likely present in alloys, silicate and oxide minerals.

DE: 1025 Composition of the mantle
DE: 3620 Mineral and crystal chemistry (1042)
DE: 3621 Mantle processes (1038)
SC: Volcanology, Geochemistry, Petrology [V]
MN: 2007 Fall Meeting

New Search