

SCG067-03

Room:105

Time:May 26 09:00-09:15

## A kelyphite produced by isochemical breakdown of garnet in a garnet peridotite from the Czech Moldanubian Zone

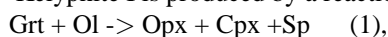
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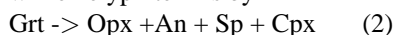
Kelyphite, a symplectitic mineral intergrowth of Opx, Cpx and spinel that developed around garnet in peridotite, is not a simple breakdown product of garnet but a reaction product between garnet and olivine. It is typical that such kelyphite has a bulk chemical composition show higher Mg and lower Al than garnet (e.g. Obata, Spengler, 2010 JpGU). We report a different kind of kelyphite (kelyphite II) that appeared to have formed by an isochemical breakdown of garnet inside of an ordinary kelyphite (kelyphite I) from a garnet peridotite of Czech Moldanubian Zone (Plesovice peridotite, Naemura et al 2009). The garnet peridotite once equilibrated at 2.3-3.5 GPa, 850-1030C intruded into lower continental crust and got partially equilibrated in spinel lherzolites facies. The temperature of the kelyphite formation has been estimated to be 730-770C (at 0.8-1.5 GPa). Kelyphite II occurs inside the ordinary kelyphite I adjacent to a relict garnet. It is revealed that the kelyphite II has nearly the same composition as the garnet by EPMA X-ray mapping. The kelyphite consists of Opx, Sp and anorthite (An). It has very well-defined lamellar structure that consists of Opx lamella containing very small spinel lamella (less than 0.2 micrometer) and plagioclase lamella that lack spinel lamella. There is a transitional zone of tens of micron width between the kelyphite I and kelyphite II domains.

The mineral assemblage Opx-Sp-An has been known to occur in kelyphite in mafic granulites and garnet pyroxenites that lack olivine (e.g. Obata, 1995) but have previously never been found in kelyphites in garnet peridotites.

Kelyphite I is produced by a reaction



while kelyphite II is by



(Kushiro & Yoder, 1966).

Reaction (2) occurs at lower pressures than reaction (1). Considering the textural relationship and phase equilibrium constraints, following scenario may be drawn. Upon decompression of garnet peridotite, kelyphite I is first developed by reaction (1). At further decompression, if garnet is still remained, it is converted to kelyphite II. This scenario assumes a time gap between kelyphite I and kelyphite II formations. But we cannot rule out a possibility that reaction (2) started before reaction (1) ceased.

### References:

Kushiro, I. and Yoder, H. S. Jr. (1966) *J. Petrol.*, 7, 337-362.

Naemura, K. et al. (2009) *J. Petrology*, 10, 1795-1827.

Obata, M. (1994) *J. Petrology*, 35, 271-287.

Keywords: kelyphite, symplectite, garnet peridotite, isochemical breakdown, Czech