The microstructure and material transfer in kelyphites: a progressive increase of Na in the kelyphite after garnet

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Kelyphite is a fine-grained, symplectitic intergrowth of minerals produced by a breakdown of garnet. To be more accurate, it is a reaction product between garnet and olivine in case of peridotite. It is known that sodium is externally added to the kelyphite upon its formation (i.e., Read and Dawson, 1972). We found a case that sodium was progressively added externally as the kelyphite formation proceeded. The sample is a garnet peridotite taken from an ultramafic mass enclosed in a high-pressure acidic granulite, from Czech Moldanubian zone, Bohemian massif. The massif is mostly spinel peridotite and garnet peridotite occurs only in the marginal zone adjacent to the granulite. The kelyphite essentially dry and consists of orthopyroxnene, clinopyroxene and spinel. It is found that the kelyphite is concentrically zoned with respect to mineral composition and that the Na content of Cpx increases inwards, up to 2.8 Na2O wt %(Jd 20 mole%). It is proposed that the increase of Na was brought about by a progressive increase of Na chemical potential of a supposed material that was introduced during the deveopment of kelyphite. Thus the kelyphite records the temporal change of chemical potential of an externally introduced material during the kelyphite formation.