

A CLINOPYROXENE-ORTHOPYROXENE-PLAGIOCLASE SYMPLECTITE FORMED BY GARNET BREAKDOWN IN GRANULITE FACIES.

CHOUDHURI, A. and SILVA, D. Instituto de Geociencias, Unicamp, Campinas, SP, Brazil

In mafic granulites, garnet can form by reactions such as $\text{Opx} + \text{Pl} = \text{Cpx} + \text{Grt}$, or $\text{Opx} + \text{Pl} = \text{Grt} + \text{Qtz}$. In the course of isothermal decompression (ITD), garnet then breaks down to a characteristic orthopyroxene-plagioclase symplectite. Mafic, iron-rich garnet-pyroxene granulite from the Guaxupe Massif, southeastern Brazil, has this kind of symplectite that formed by near-isothermal decompression, presumably as a consequence of uplift of the Guaxupe nappe. P-T estimates for the ITD path are 9 kb/850-900°C and 6 kb/650-700°C for upper and lower limits. On closer examination of thin sections, however, these symplectites were found, at places, to consist of vermicular clinopyroxene-orthopyroxene-plagioclase, with clinopyroxene clearly growing from the garnet that is breaking down, modal amounts of clinopyroxene being less than orthopyroxene. The clinopyroxene in the symplectite is bleb-shaped, has high interference colours and inclined extinction, while the orthopyroxene has both vermicular and rod shapes with basal parting. The pale green, non-pleochroic clinopyroxene was confirmed by Raman spectroscopy, as was the pink pleochroic orthopyroxene, and EDS analysis by scanning electron microscope showed it to be a Ca-Cpx. In the present case, therefore, the garnet breakdown is thought to be better represented by the reaction $\text{Cpx}_1 + \text{Grt} = \text{Cpx}_2 + \text{Opx} + \text{Pl}$. The occurrence of clinopyroxene in the symplectite is possibly composition controlled, involving crossing of triangular planes in a composition tetrahedron, rather than crossing of tie-lines.