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SPINELS IN PROGRESSIVE METAMORPHISM OF KOMATIITIC ROCKS FROM MINAS GERAIS STATE, BRAZIL

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Amphibolite-facies komatiitic occurences from Morro do Ferro greenstone belt and Rio Manso region, Nova Lima Group, Minas Gerais State, Brazil, exhibit spinel-group minerals which vary from chromiferous magnetites at lower grade to Mg-Al-rich spinels at higher amphibolite facies. In Fortaleza de Minas komatiites (Alpinópolis/Mumbuca area), chrome-spinel was not a liquidus phase, due to the Mg-rich composition of the original liquids. Chromiferous magnetite occurs in chlorite - Ca-amphibole associations as the only spinel phase up to chlorite breakdown, when it is joined by green spinel, sometimes overgrowing Cr-magnetite cores (Rio Manso region). Green spinel and Cr-magnetite occur together in olivine-orthopyroxene-hornblende rocks, magnetite becoming sensitively more Cr- and Al-rich with increasing grade. Rounded spinel inclusions in olivine porphyroblasts exhibit domains of complex symplectitic intergrowths between ilmenite and Cr-Mg-Al-spinel in Cr-rich magnetites with higher-than-average Mg, Al and Ti contents. These grains are interpreted as partially reequilibrated, high-temperature, complex solid solution metamorphic spinels. During retrometamorphic reequilibration, chlorite was partially reconstituted, and green spinel remnants occur mantled by Cr-magnetite. This research was supported by FAPESP grant 97/00640-5.

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