

CHEMICAL AND TEXTURAL EVOLUTION OF MAFIC MINERALS FROM AGPAITIC NEPHELINE SYENITES FROM THE POÇOS DE CALDAS ALKALINE MASSIF - SOUTHEASTERN BRAZIL.

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The most typical agpaitic nepheline syenites from Poços de Caldas are coarse-grained massif rocks with poikilitic or interstitial pyroxene, eudialyte and pectolite, generally called khibinites. K-feldspar, nepheline and aegirine-augitic pyroxene cores are the magmatic minerals. Late-magmatic paragenesis includes aegirine pyroxene rims, eudialyte and pectolite. Crystals are homogeneous (eudialyte) or show smooth concentric zoning (pyroxene); only pectolite crystals show abrupt increase in Ca contents close to the border. During post-magmatic stages, pyroxene was overgrown by Ti-rich aegirine, that cuts or substitutes the felsic minerals; eudialyte crystals were partly transformed into a second Nb-Sr-rich variety; prismatic lamprophyllite, sometimes associated to zeolites, crosscut the original texture. Oscillatory or complex zoning patterns characterize all these post-magmatic minerals. Strongly foliated rocks with eudialyte and acicular pyroxene, referred to as lujavrites, constitute another important group. Felsic minerals and eudialyte show textural and compositional patterns similar to those observed in khibinites; poikilitic pyroxene and pectolite are lacking. Acicular pyroxene and lamprophyllite, together with zeolites (an association frequently found in veins in wall-rock samples), form sheets that partly follow the primary foliation of the rock and partly cut the original texture, leading to the conclusion that lujavrites crystallized as foliated, eudialyte-bearing, hololeucocratic rocks, transformed during post-magmatic stages by injection of pyroxene-lamprophyllite vein-forming fluids. Other nepheline syenites, bearing lorenzenite and pectolite, have a less agpaitic nature. Post-magmatic processes are much less prominent, due to their smaller initial volatiles contents.