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**Ultrahigh-temperature metamorphism in granulites with no “classic diagnostic” mineral assemblage, from the Socorro-Guaxupé Nappe, MG, Brasil**

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In most known granulite terrains recognized as underwent ultrahigh-temperature metamorphism, a series of diagnostic mineral assemblages is commonly recognized, *e.g.* sapphirine + quartz, aluminum-rich orthopyroxene + sillimanite + quartz, among others. In southern Minas Gerais, the Socorro-Guaxupé Nappe is part of the Brasília Orogen, a neoproterozoic fold belt related to a magmatic arc develop in the active margin among São Francisco and Paranapanema Plates. At the base of this nappe, a felsic garnet granulite dominates the geology, bearing a few lenses of mafic garnet granulite, leucosome veins with garnet and orthopyroxene, and rare layers of pelite diatexite. With samples collected in Guaxupé, UHT conditions were calculated for this unit. Samples collected south of Varginha, in outcrops in the Verde River, at the base of this nappe, are used here. The felsic garnet granulite is composed of quartz, two feldspars, garnet, orthopyroxene, clinopyroxene, and ilmenite, which are the metamorphic peak assemblage; apatite and zircon are the main accessory phases. Around garnet consecutive corona of clinopyroxene, and rare orthopyroxene, is followed by hornblende and biotite, both also occurring as replacement of pyroxene porphyroblasts. Garnet composition has almost no chemical zoning along the grains, with average composition of  $\text{alm}_{0.50}\text{prp}_{0.30}\text{grs}_{0.18}\text{sp}_{0.02}$ . Orthopyroxene presents  $X_{\text{Mg}}$  of 0.60 with core slightly richer in aluminum when compared to rims, varying from 0.14 to 0.11 a.p.f.u. Plagioclase varies from  $\text{An}_{41}$ , in core, to  $\text{An}_{39}$ , at rims. In clinopyroxene aluminum varies from 0.21 to 0.15 a.p.f.u., with core richer in this element, which is balanced by Mg, with  $X_{\text{Mg}}$  varying from 0.66 to 0.71. *P-T* calculation is done for two samples using three different methods, THERMOCALC average *P-T*, RCLC and pseudosection. Average *P-T* method using the anhydrous mineral assemblage yielded, for VAB-01,  $938 \pm 47$  °C and  $11.4 \pm 0.6$  kbar, and, for VAB-19,  $927 \pm 87$  °C and  $11.6 \pm 0.4$  kbar. The results produced with the RCLC method are better for sample VAB-01, as smaller adjustments were necessary and yields 1004 °C and 13.45 kbar. Although, similar temperature results are calculated for VAB-19, 1035 °C, much higher pressures are obtained, 15.4 kbar, and major adjustments are required, as it is also noted with THERMOCALC calculations that yielded larger uncertainties. Pseudosection calculation in the NCKFMASHTO chemical system indicates the anhydrous mineral assemblage is only stable, for this bulk composition, at temperatures higher than 880 °C and with pressures between 9.2 and 12.7 kbar. This is in agreement with most calculation done, but rolled out the RCLC higher-pressure calculations. Rare lenses of diatexite lenses of pelite protolith, inside this unit, is formed by 80 to 90% of granite composition leucosome and 10 to 20 % of round aggregates of garnet, sillimanite, rutile, green spinel, and smaller amounts of quartz, which demonstrate that fertile compositions underwent extreme partial melting, in agreement with such extreme calculated *P-T* conditions. Although no diagnostic mineral assemblage is recognized, so far, within rocks of the Socorro-Guaxupé Nappe, its character of ultrahigh-temperature metamorphism is here reinforced.