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Petrological Evolution of Silica-undersaturated Sapphirine-bearing Granulite at Ultrahigh-temperature Conditions in the Salvador-Curaçá Belt, Bahia, Brazil

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The Salvador-Curaçá Belt, located in São Francisco Craton, Brazil, was subjected to granulite facies metamorphism during the Rhyacian orogeny (*c.* 2.0 Ga). In this belt enclaves of silica-undersaturated sapphirine-bearing granulite occur in a charnockite outcrop situated along a regional shear zone related to the orogenic, overall transpressional D_2 regime. The form of the enclaves and their microstructures suggest that the mineral reactions occurred under regional stress. The sapphirine-bearing granulite shows domains of mineral assemblages that record reactions between melt and peritectic phases (orthopyroxene$_1$ + spinel$_1$ + (F-Ti)-biotite$_1$). Melt represented by the charnockitic magma was not only a necessary phase for the evolution of the mineral assemblage domains in the sapphirine-bearing granulite, but was also the heat source necessary for the mineral reactions to occur at the ultrahigh temperature of 900-1000°C at 5-8 kbar. The mineralogical evolution of the domains reflects the influence of the bulk silica composition on the chemical volume of the reactions, amongst which sapphirine was formed as a product of the destabilization of spinel$_1$ through the setting-up of chemical potential gradients with the silica-saturated magma. Except for the feldspars and cordierite, the minerals contain ferric iron, and the bulk concentrations of the mineralogical domains of up to 3.10 wt. % Fe_2O_3 are reflected by the formation of magnetite. Fe_2O_3 was an inherent and essential component that allowed the production of cordierite-spinel symplectite in domains with bulk compositions of $M_{SiO2} \cong 0.5$, during a near-isothermal decompression retrograde trajectory. Electron microprobe dating of monazite inclusions in orthopyroxene in the charnockite indicates magma genesis at *c.* 2.08 Ga, whereas the 2.05 Ga age obtained for the domains in the sapphirine-bearing granulite could represent the opening of U-Th-Pb monazite system by the reacting magma.