

ISOTOPIC INSIGHTS INTO THE MESO-ARCHEAN GRANULITIC BELT, SOUTHERN SÃO FRANCISCO CRATON, BRAZIL

¹TEIXEIRA, W., ²CARNEIRO, M. A, and ²OLIVEIRA, A. H. ¹Institute of Geosciences, University of São Paulo, São Paulo, Brazil; ²School of Mining, Federal University of Ouro Preto, Ouro Preto, Brazil.

Granulite facies rocks in São Francisco Craton (SFC) play an important role in the understanding of the deep crustal processes of Mid-Archean high-grade gneiss complexes. In southern SFC, acid granulites (including granitoids), enderbites, partly migmatized banded gneisses, and mafic-ultramafic bodies make up a high-grade belt. Chemically, these rocks are: i) trondhjemitic-tonalitic enderbites; ii) calc-alkaline charnokites and enderbites; iii) mafic-ultramafic rocks (metabasalts, pyroxene-amphibolites, pyroxenites). Rb/Sr and Pb-Pb whole rock isochrons constrain the granulitic metamorphism between 2855 ± 41 Ma ($^{87}\text{Sr}/^{86}\text{Sr}[\text{SrRi}] = 0.70041 \pm 0.0014$) and 2968 ± 24 Ma ($m_1 = 8.3$), and the gneiss protoliths were accreted at 3.07 - 2.93 Ga (TDM model ages). The $\text{eNd}(t=2.85 \text{ Ga})$ values -- either slightly positive (+0.9 to + 0.2) or negative (-0.6 to -1.2) -- suggest that the plutonism derived from short-lived calc-alkaline magmatic series and mafic volcanics. However, contrasting TDM ages (3.19 - 3.61 Ga) coupled with $\text{eNd}(t=2.85\text{Ga})$ values (-2.4 to -5.2) and the $m_1 = 8.3$ support the recycling of older components. The above evidences are consistent with a convergent margin scenario for the belt evolution, comparable to that of the Jequié granulites, in northern SFC. Additional Rb/Sr ages -- 2661 ± 36 Ma ($\text{SrRi} = 0.70148$); 2550 ± 43 Ma ($\text{SrRi} = 0.70507 \pm 0.00086$); ~ 2500 Ma ($\text{SrRi}@ 0.705$) -- probably reflect younger overprints.