

## **Discovery of a Neoarchean arc-root leucogabbro-anorthosite complex in the São Francisco Craton, Brazil**

ELSON OLIVEIRA<sup>1</sup>, ELTON DANTAS<sup>2</sup>, WILSON TEIXEIRA<sup>3</sup>

<sup>1</sup>Dept. of Geology, University of Campinas, Brazil,  
elson@ige.unicamp.br

<sup>2</sup>Dept. of Geology, University of Brasilia, Brazil,  
elton@unb.br

<sup>3</sup>Dept. of Mineralogy and Geotectonics, Institute of  
Geosciences, University of São Paulo, Brazil,  
wteixeir@usp.br

Plagioclase megacrystic-rich leucogabbro-anorthosite complexes are almost entirely restricted to the Archaean and they may represent relicts of the root of island arc mafic complexes. Examples are the Messina (3270 Ma; South Africa), Fiskenaeset (2973 Ma; West Greenland), Bad Vermillion Lake (>2716 Ma; Ontario), and Sittampundi (2541 Ma; India) complexes.

Here we report on a recently discovery of the relicts of a tennis-ball-textured, calcic plagioclase megacrystic-rich leucogabbro-anorthosite complex in the N3 settlement at the northern boundary of the São Francisco Craton, Brazil. The complex crops out as dismembered bodies, a dozen metres long within grey granitic gneisses of the Sobradinho Paleoarchean polymetamorphic basement. Hornblende-bearing leucogabbro is the main lithotype of the body, followed by anorthosite and gabbro. Local modal layering is conspicuous, grading from gabbro through leucogabbro to anorthosite. Igneous intergranular texture of plagioclase and hornblende is still preserved, implying that the parental magma was hydrous. On primitive-mantle normalised multi-element diagram the studied rocks show fractionated (La/Yb)<sub>n</sub> patterns, positive Sr and Eu anomalies - typical of cumulate rocks, - and negative Nb anomaly.

Zircon LA-SF-ICP-MS age dating yielded the weighted average age of  $2745 \pm 6$  Ma (n=26; MSWD=4.9) for <2% discordant grains. This age matches ages of several basaltic/gabbroic complexes in the Superior Province (Canada), Kaapvaal Craton (RSA), Pilbara Craton (AU), and in the North Atlantic Craton, which were originated in varied tectonic settings.

The hydrous nature of the parental magma combined with the trace element signature of the rocks suggest a suprasubduction zone geodynamic setting for emplacement of the 2745 Ma-old N3 leucogabbro-anorthosite complex. Our discovery open a new perspective for constraining the time of global plate tectonic spread in the Archaean of the São Francisco Craton.