

**32<sup>nd</sup> IGC - Florence, 2004****Abstract title**

PALEOPROTEROZOIC MAFIC DYKES FROM THE CENTER-WESTERN REGION OF THE GOIAS STATE, BRAZIL: PETROLOGY, GEOCHEMISTRY AND GEOCHRONOLOGY

**Authors**

CORREA DA COSTA PAULO C. <sup>1</sup>, GIRARDI VICENTE A. V. <sup>1</sup>, TEIXEIRA WILSON <sup>1</sup>

presenter's e-mail: girardi@usp.br

1 - Institute of Geosciences -University of São Paulo

**Keywords**

Mafic Dykes

Goiás, Brazil

Paleoproterozoic

Mantle

**Abstract**

Precambrian mafic dyke swarms occur in the Central Brazilian Shield Goiás State, Brazil. These dykes intrude Achaean granite-gneiss terrains of the Goiás Massif along two main trends (NE and NW).

The dykes were subdivided in three groups based on petrographic data: diabases, metabasites and amphibolites. Some of the thicker dykes (~100 meters) vary from ophitic to subophitic diabases in the center to granoblastic amphibolites in the recrystallised borders. These textural and petrographic features, and the similarity of geochemical characteristics of the lithotypes indicate that the dykes have the same crystallization age.

The mafic dykes have tholeiitic affinities and predominantly basaltic composition. Because of the important chemical differences they were divided into two rock-types based on TiO<sub>2</sub> contents: 1 - high TiO<sub>2</sub> (TiO<sub>2</sub> > 1,5%); 2 - low TiO<sub>2</sub> (TiO<sub>2</sub> < 1,5%). In general, the high TiO<sub>2</sub> type occurs mainly in the southern portion of the area, while the low TiO<sub>2</sub> dykes crosscut northern and southern terrains.

The mg# values range from 0,49 to 0,31 and from 0,33 to 0,18 in the low and high TiO<sub>2</sub> groups respectively. In both cases, with decreasing mg# Fe<sub>2</sub>O<sub>3</sub>T, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, Na<sub>2</sub>O, Zr, Y, La, Nb, Ba, Zn, Ce increase of and Al<sub>2</sub>O<sub>3</sub>, CaO, Cr and Ni decrease. Sr is virtually constant. High TiO<sub>2</sub> dykes are the richest group in incompatible elements and REE.

Rb-Sr whole-rock diagram and Ar<sub>40</sub>-Ar<sub>39</sub> (amphibole) analyses indicate that the crystallization age of the mafic swarm is 2.4 Ga. In the e(Sr) - e(Nd) diagram most of the samples plot near to the Bulk Earth composition.

The different geochemical characteristics of the high and low TiO<sub>2</sub> groups can be attributed to four possible reasons: fractional crystallization, crustal contamination, variable degrees of melting of a homogeneous mantle, and a heterogeneous source. The available data indicate a heterogeneous mantle as the most probable source of the different magmas. The geochemical and isotopic similarities with São Francisco and Amazonia Craton dykes suggest that the emplacement of the Goiás swarm occurred in an intracratonic continental environment.

**ACCEPTED as Poster Presentation**

**in session: "G01.06 - Structure, evolution and composition of the continental mantle lithosphere: integrated models based on geophysical, geochemical and petrological studies"**