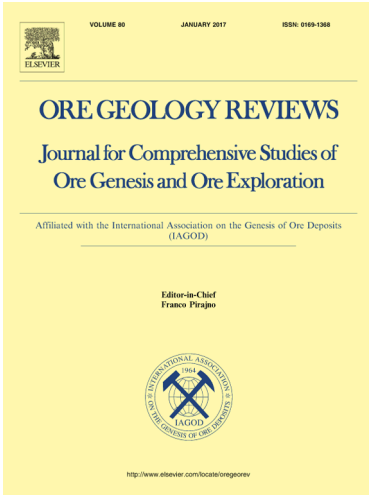

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STRUCTURAL, MINERALOGICAL, GEOCHEMICAL AND GEOCHRONOLOGICAL CONSTRAINTS ON ORE GENESIS OF THE GOLD-ONLY TOCANTINZINHO DEPOSIT (PARA STATE, BRAZIL)

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ABSTRACT

The Tocantinzinho gold deposit is located in the north of Brazil, in the Tapajós Gold Province of the Amazon Craton. Current total measured and indicated resources are 70.2 Mt @ 1.06 g/t Au (2.4 Moz). The mineralized bodies are hosted in equigranular hornblende-biotite syeno and monzogranites plutons, with many aplite and pegmatite pockets. The magmas have I type signatures and were oxidized. The ages of the mineralized granites vary between 1996.1±2.2 Ma and 1989.1 ± 1.1 Ma, and they are situated in the middle of a tectonic corridor formed by shear zones oriented parallel NW-SE that cut regional biotite-hornblende granodiorites with ages between 2007±8 Ma and 1997±10 Ma. Three hydrothermal phases, simultaneous to tectonic deformations, affected the Tocantinzinho Au deposit: the first, H1, occurred approximately at 1996.1 ± 2.2 Ma, during the magmatic-hydrothermal transition, which altered the igneous feldspars, biotite and hornblende. Then, the granites were brecciated in a transpressional, brittle and hydraulic fracturing regime, forming B1 breccias simultaneous to hydrothermal alteration H2, developed between 1996.1±2.2 Ma and 1989.1 ± 1.1 Ma. The mineralization occurred during this phase, which simultaneously disseminated 1.0 to 1.5 g / t of gold, together with pyrite and minor galena, and formed few quartz + pyrite veins with high gold contents, between 1.5 and 70.0 g / t. In an undated tectonic event occurred after and probably near 1989.1 ± 1.1 Ma, the entire mineralized region was cut by andesite dikes that reached the Proterozoic surface, and generated a new hydrothermal, degassing