

TIMING OF THE PROTEROZOIC MAGMATISM AND SHEAR-ZONE RELATED GOLD MINERALIZATIONS FROM PORTO NATIONAL REGION (STATE OF TOCANTINS, BRAZIL)

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Dating of igneous rocks and shear-zone related gold mineralizations using zircon Pb evaporation, Pb-Pb and Rb-Sr on whole rock and minerals yielded new geochronological constraints on the Proterozoic evolution of the Porto National region located in the northern part of the Goiás Massif (State of Tocantins). No Archean remnants were so far identified. Paleoproterozoic magmatism consists of felsic volcanic rocks (zircon $^{207}\text{Pb}/^{206}\text{Pb}$ age: 2137 ± 12 Ma; Pb-Pb on whole rock age: 2028 ± 206 Ma) followed by late-orogenic granitic intrusions (Lajeado granite: zircon $^{207}\text{Pb}/^{206}\text{Pb}$ age: 2086 ± 2 Ma and Pb-Pb on whole rock age: 1999 ± 64 Ma; Ipueiras granite: $^{207}\text{Pb}/^{206}\text{Pb}$ age: 2045 ± 34 Ma). Neoproterozoic magmatism, related to Brasiliano orogeny, is represented by syn-kinematic Matança monzogranite dated at 545 ± 4 Ma (Pb evaporation on zircons) and 510 ± 30 Ma (Rb-Sr on whole rock). Pb isotopes of feldspars from this granite suggest an origin by melting of a Paleoproterozoic lower crustal material. Gold mineralization is hosted by N-S trending sulfide-quartz veins along in shear zones which crosscut Paleoproterozoic volcanics and granites. Rb-Sr dating of the hydrothermally altered ultramylonites from such shear zones indicates an age of 565 ± 45 Ma for mylonitization and vein emplacement. Pb isotopes on galenas and pyrites from the mineralized quartz-veins also pointed out a Neoproterozoic age for the sulfides. At least three different Paleoproterozoic sources for Pb of the sulfides have been recognized, according to their geographical location.