$^{40}Ar/^{39}Ar$ ages of the Aguapeí Thrust Belt (SW Amazonian Craton): Crustal evolution and metallogenetic implications

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SW Amazonia craton comprises terranes formed or reworked during accretionary and collisional events coeval to the Rodinia collage related to the development of Grenvilian (Sunsás/Aguapeí) mobile belts. As a result of the collisions between older cratonic areas, the formations of the orogenic terranes define sites of important metal concentrations, mainly gold. Although a great number of ore deposits should be found within Grenvilian mobile belts, comparatively few deposits in South America are reported in the literature.

Samples from the Aguapeí Thrust belt rocks were collected at different localities from open pits and from road cut outcrops. The micaceous rock samples were crushed and sieved at 30-60 mesh, and the sericite crystals were separated from quartz and oxides by handpicking under a binocular microscope. The grains were placed into aluminum containers and irradiated at nuclear reactor. The analyses were done using the Mass Analyzer Products (UK) MAP-215-50 mass spectrometer.

This work presents $^{40}Ar/^{39}Ar$ ages from Pontes e Lacerda gold deposits located in the boundary of Bolivia and Brazil. The purpose of the $^{40}Ar/^{39}Ar$ dating method was to obtain age constraints of deformational events and of hydrothermal alteration responsible for the mineralization. New data allow to constrain the period of collisional and hydrothermal solution percolations and to approach crustal evolution and metallogenetic modeling in order to contribute to a better understanding of the end of Mesoproterozoic times in SW Amazonian craton envisaging paleocontinent reconstructions.

The $^{40}Ar/^{39}Ar$ ages of hydrothermal sericites analysis from gold deposits hosted in the Aguapeí Group yielded cooling ages from 914 to 912 Ma. We interpret the ages as result the Sunsás-Aguapeí orogenic process generated the structures that made possible the circulation of hydrothermal solutions coeval with deformation. This late-tectonic event probably was responsible for the metallic accumulation of the Pontes e Lacerda gold district. The geological mapping of gold deposits revealed that auriferous ore in a regional scale is controlled by shear zone and detachment surfaces. The $^{40}Ar/^{39}Ar$ cooling age of 912-906 Ma represents the orogenic processes and comprises an important metallogenetic epoch in Amazonian craton.