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Minerals, rocks and fluids: alphabet and words of planet Earth



Nelle pagine seguenti vengono riportati gli abstract presentati nelle sessioni della seconda European Mineralogical Conference emc2016 “Minerals, rocks and fluids: alphabet and words of planet Earth”, che la SIMP ha organizzato a Rimini nel periodo 11-15 settembre 2016.

Dal momento che tutti gli argomenti trattati nella Conference possono interessare i Soci SIMP, gli abstract inseriti nel volume distribuito ai partecipanti al congresso sono stati riportati integralmente, senza operare selezioni di alcun genere.

Si sottolinea che Plinius non rappresenta in alcun modo – nemmeno parzialmente – il volume ufficiale degli abstract del congresso che rimane quello distribuito in formato digitale ai partecipanti al congresso.

Pertanto la pubblicazione degli abstract su Plinius, è da ritenersi esclusivamente come un servizio utile per i Soci.

Si ringraziano i responsabili editoriali del Volume degli Abstracts di emc2016, Marco Pasero e Bernardo Carmina, per la cortese collaborazione.

PRELIMINARY U-Pb LA-ICPMS ZIRCON ANALYSES FROM THE GOIAS COMPLEXES: SHRIMP COMPARISON AND INTRUSION AGE

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Cana Brava, Niquelândia and Barro Alto are three mafic-ultramafic layered intrusions (from N to S) which form a ~ 350 km, NNE-trend belt within the Brasilia Belt (Goiás state, Brazil). Presently, their intrusion ages and geological evolution are still debated.

The Niquelândia and Barro Alto complexes are formed by two main sequences: the upper sequence and the lower one. Some authors suggest that the two sequences represent two separate intrusions: the upper sequence would be a Mesoproterozoic intrusion at ~ 1.3 Ga, whereas the lower sequence a Neoproterozoic one at ~ 790 Ma. According to this interpretation, the two sequences were re-crystallized by Neoproterozoic metamorphism and exhumed and juxtaposed during the Brazilian event of formation of the Gondwana continent.

Another model suggests that the two sequences are part of the same intrusion, which occurred during the Neoproterozoic and was exhumed during the Brazilian event.

New U-Pb SHRIMP-II zircon analyses were performed at the Universidade de São Paulo from samples from Cana Brava and Barro Alto, the two least-known complexes in order to clarify the sequence of events that led to their formation.

Analyses were then replicated at the CIGS of the Università di Modena e Reggio Emilia using a X Series^{II} quadrupole ICP-MS coupled with a New Wave UP-213 Nd:YAG laser ablation system. Zircons were sampled through a 40 µm spot (static mode), using a He flux of 0.6 l/min, with an energy density of ~ 6 J/cm². Daily instrument calibration was performed with the NIST 610 standard, monitoring also the oxide production rate (²³²Th/¹⁶O/²³²Th << 0.01%). Laser-induced elemental fractionation was corrected by repeated analyses of the standard zircon TEMORA2 (Black et al., 2004). A secondary reference material (zircon CZ3) was used to check the precision and accuracy of the corrections. Our LA-ICP-MS data are preliminary, but very promising being the accuracy of the measured ratio within the SHRIMP variability. We are currently working to improve the precision of our methodology, which however is now comparable with literature LA-ICP-MS data (propagated 2SE ~ 2-6%; Horstwood et al., 2008).

Overall, the isotopic data of Cana Brava and Barro Alto complexes provide for a coeval Neoproterozoic intrusion age at ~ 790 Ma. These ages are consistent with those reported in literature for Niquelândia.

Mesoproterozoic ages, consistent with the formation age of the metavolcanic-metasedimentary sequence in magmatic contact with the complexes, were found in inherited zircon cores.

Our data clearly show that the Goiás complexes are formed by single bodies intruded during the Neoproterozoic at ~790 Ma and that the hypothesis of two separate intrusions juxtaposed by tectonic must be discarded.

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