51º CONGRESSO BRASILEIRO DE

GEOLOGIA

13 A 17 DE OUTUBRO DE 2024

BELO HORIZONTE - MG

Centerminas Expo

ANAIS

ID do trabalho: 2490

Área Técnica do trabalho: TEMA 20 - Mineralogia e Petrologia Metamórfica

Título do Trabalho: NEW MONAZITE AGES AND CHEMISTRY BY LASS-ICP-MS OF THE HIGH-PRESSURE FELSIC GRANULITES OF THE CARVALHOS KLIPPE, SOUTHERN BRASÍLIA OROGEN, SE BRAZIL

Forma de apresentação: Oral

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Resumo do trabalho:

During the amalgamation of West Gondwana in the Neoproterozoic, the collision between an active margin (Paranapanema paleocontinent) and a passive margin (São Francisco paleocontinent) generated the Southern Brasília Orogen (SBO) in southeast Brazil. The Andrelândia Nappe System represents a metasedimentary domain subducted to mantle depths, resulting in the formation of high-pressure granulites at metamorphic conditions of ~14 kbar and 850 °C (Carvalhos Klippe, SBO). This work focused on monazite petrochronology via laser ablation split stream inductively coupled plasma mass spectrometry (LASS-ICP-MS) to constrain the timing of the high-pressure metamorphism of the rutile-kyanite-garnet-orthoclase granulites from the Carvalhos Klippe. Monazite compositional X-ray maps reveal complex compositional zoning which suggests different episodes of growth and consumption during the high-pressure granulite facies metamorphism. In-situ LASS-ICP-MS analyses were conducted to obtain isotopic U-Pb ratios and trace element composition at the mineral volume to correlate the age associated with specific compositional domains. The results obtained encompass distinct patterns of heavy rare earth elements (HREE), Y content, and Eu/Eu* ratios which may reflect monazite growth in different stages along the metamorphic pathway. The compositional zoning of HREE, Y, and Eu/Eu* may indicate distinct episodes of monazite crystallization during the metamorphism between ca. 620-600 Ma. Prograde ages were interpreted in monazite enriched in HREE and Y with older ages. In addition, the timing of the metamorphic peak was determined in HREE-Y-depleted monazite inclusions in garnet porphyroblasts, and the retrograde stage is marked by monazite HREE-Y-enriched domains interpreted to reflect the partial replacement of garnet by biotite + quartz. The high-pressure felsic granulites of the Carvalhos Klippe likely record at least ca. 20 Ma of monazite growth.

Palavras-Chave do trabalho: Carvalhos Klippe; high-pressure granulites; LASS-ICP-MS; monazite petrochronology;