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LIVRO DE RESUMOS

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MONAZITE PETROCHRONOLOGY OF FELSIC HIGH-PRESSURE GRANULITES FROM THE CARVALHOS KLIPPE (SOUTHERN BRASÍLIA OROGEN): INSIGHTS FROM NOVEL LASER ABLATION SPLIT STREAM ROUTINES

Lorena de Toledo Queiroz[1]
Brenda Chung da Rocha[2]
Bruno Vieira Ribeiro[3]
Caue Rodrigues Cioffi[4]
Vinícius Tieppo Meira[5]

1- Universidade de São Paulo; 2- Institute of Geosciences, University of São Paulo; 3- Timescales of Mineral Systems, School of Earth and Planetary Sciences, Curtin University; 4- Institute of Geosciences, University of São Paulo; 5- Institute of Geosciences, University of Campinas

Monazite ([LREE, Th] PO4) is a commonly used petrochronometer in metamorphic rocks due its ability to record the timing of the prograde and retrograde metamorphism and its association with metamorphic reactions. Despite being widely studied in (ultra)high-temperature metamorphic rocks, the monazite behavior in high-pressure rocks has been assessed by very few studies, hence preventing a thorough understanding of this key petrochronometer. This study reports preliminary monazite isotopic and trace element data from six felsic high-pressure granulite samples from the Carvalhos Klippe obtained via laser ablation split-stream inductively coupled plasma mass spectrometry (LASS-ICP-MS). The felsic high-pressure granulites in the Carvalhos Klippe within the Andrelândia Nappe System (southern Brasília Orogen) display a vast array of metamorphic textures recording high-pressure metamorphic conditions of ~850 °C and 14 kbar. The investigated samples are coarse-grained rutile-kyanite-garnet-orthoclase gneisses with minor plagioclase and biotite, and millimeter to centimeter-scale garnet and kyanite porphyroblasts. Twenty-eight monazite grains in different textural settings were selected after detailed petrographic description. All monazite grains were previously characterized by backscattered electron imaging and high-resolution X-ray mapping of Ca, Y, Th and U using an electron microprobe (EPMA) to identify compositional zoning. Based on textural and chemical features, the monazite grains were classified as concentric, lobate and patchy. The obtained U–Pb and trace element data display distinct degree of heavy rare earth element (HREE) fractionation, Y content and negative Eu anomaly likely due to garnet and plagioclase stability in high-pressure granulite conditions. The U-Pb data precisely define the timing of these processes between c. 630-600 Ma, shading light into the timing of high-pressure processes in the Carvalhos Klippe for the first time.

PALAVRAS-CHAVE: MONAZITE, PETROCHRONOLOGY, HIGH-PRESSURE GRANULITE, LASER ABLATION SPLIT-STREAM INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY