

BSE/CL Image Analysis of Zircons from Contrasting Paleoproterozoic and Neoproterozoic Granites in Caçapava, Southern Brazil

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The Caçapava granitic-gneissic unit from southern Brazil is very similar in the field, under the microscope and in geochemical composition (high-K calcalkaline). Zircon U/Pb SHRIMP magmatic ages show that two units are present – the Neto Rodrigues gneisses (2,448 \pm 7 Ma) and the Caçapava granite (560 \pm 10 Ma). The Neto Rodrigues gneisses are mylonitic, surrounded by pelitic and volcanic schists of the Paleoproterozoic Passo Feio Formation. Both granitic bodies were deformed by a strong strike-slip dextral shearing event. Because of their similar properties, we investigated the internal structure of zircons from one sample from each body with backscattered electron and cathodoluminescence imaging as a criterion of discrimination of the two units. The Caçapava granite zircons are euhedral to subhedral, elongated 3:1, translucent and colorless. Many crystals are included in allanite and biotite, but some occur in the matrix or in intercrystalline positions. Igneous oscillatory zoning is common; some apatite inclusions are observed. Zircons from the Neto Rodrigues gneisses are short pyramids elongated 2:1, euhedral but somewhat rounded. The crystals are homogeneous in BSE images and variably homogeneous or zoned in CL images. No metamict zones are observed, and only very few inclusions are present. The two zircon populations are distinctive in BSE/CL images, and this feature may be used to discriminate the two geological units – a Paleoproterozoic Neto Rodrigues granodiorite-tonalite gneiss and a Neoproterozoic granodiorite-monzogranite Caçapava granitic complex.