

# Geothermobarometry of retro-eclogites from the Passos Nappe in São Sebastião do Paraíso - MG, Brazil

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**ABSTRACT:** This study presents data on retro-eclogites (RE) from the Passos Nappe (PN) in São Sebastião do Paraíso, Minas Gerais, Brazil. These rocks occur as lenses in metasedimentary rocks the (Araxa Group) in the Southern Brasília Belt, a Neoproterozoic orogenic belt associated with the formation of Gondwana. Ten occurrences of RE were found in the study area. They occur either as blocks or small-sized outcrops (metric to decametric) and are always associated with the contact between a Grt-Bt paragneiss layer that divides two sequences of upper-amphibolite to granulite facies Grt and Ky bearing rocks. Macroscopically RE are greenish and predominantly composed of Grt porphyroblasts (up to 1 cm) and clinopyroxene (Cpx). Under the microscope, it is possible to identify two textures that indicate post pressure (*P*) peak equilibration: a symplectitic texture involving the breakdown of the Na-rich, eclogite facies, Cpx1 to a Na-poor Cpx2 and Na-rich Pl; and a corona texture of Pl and Hbl around Grt grains, formed from the breakdown of Grt and Cpx1. Grt grains show few inclusions of bluish Fe-pargasite, interpreted to represent the pre-eclogite / eclogite stage. Rt and Ilm are the main accessory phases. Based on metamorphic textures and mineral chemistry obtained by EPMA, four stages of the P-T-t path are identified, namely: 1. Early-Eclogite stage, represented by the mineral assemblage Grt+Fe-Parg (up to 680°C and 17 Kbar) 2. Eclogite stage represented by the mineral assemblage Grt+Cpx1 (up to 740°C and 14 Kbar); and two post *P* peak stages, represented by the symplectitic (Cpx2 + High-Na Pl) and the corona textures (Pl + Hbl). For these 2 stages, *PT* values are highly variable (from 10 to 14 kbar and from 700 to 740°C). The *P* values obtained for the eclogite stage (2) are probably underestimated, due to the reequilibration of Grt and Cpx1 at high *T* after the eclogite stage (up to 740°C, stages 3 and 4).

**KEYWORDS:** ECLOGITE, PASSOS NAPPE, METAMORPHISM, EMP