

PETROLOGY, GEOCHEMISTRY AND STRUCTURAL CONTROL OF A LATE VARISCAN RING PLUTON: THE SANTA EULÁLIA PLUTONIC COMPLEX (ALENTEJO, PORTUGAL)

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The Santa Eulália Plutonic Complex (SEPC) is a 400 km² late variscan granitic pluton in the SW sector of the Iberian Variscides which cross-cuts the regional NW-SE Upper Proterozoic to Lower Palaeozoic lithological units.

From the rim to the core, SEPC shows a medium- to coarse-grained pink granite (G0 group) involving large elongated masses of mafic to intermediate rocks (M group) and a central grey monzonitic granite (G1 group) mainly represented by medium-grained textures. Elemental geochemistry shows that the peripheral G0 facies represent more evolved magmatic liquids with calc-alkaline to alkali-calcic character and metaluminous tendency. Instead, the G1 monzonitic facies are typically calc-alkaline and show peraluminous tendency.

Magnetic Susceptibility analysis sustains major genetic differences between pink and gray granites. Sr and Nd isotopic analysis suggest petrogenetic processes involving crustal melts and primary magmas strongly contaminated by crustal fractions.

The thermal effects are restricted to the roof pendants and the metasomatic effects are constrained by the carbonate rocks. The shape of the pluton, absence of lateral thermal effects, smooth bend of the vertical host rocks around the pluton in eastern border suggest a small thickness of the massif in the western border, and a deep rooting in the major vertical shear zone at the eastern border (Ribeiro, M.A., et al., 2013). Complementary, a sub-volcanic concentric structure, whose implantation is also regional and structurally controlled by a late variscan N-S compression tension fields is proposed. This is suggested by E-W major axis SEPC orientation and pointed by fracturing studies in dimension stone quarries.

This work aims to contribute for a better understanding of the tectonic and magmatic events that promote the genesis and intrusion of this igneous body, as a representative unit of the late variscan magmatism.

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