

The link between diatexites and syn-tectonic granites of an Iberian Variscan anatectic complex

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The Figueira de Castelo Rodrigo – Lumbrales Anatectic Complex (FCR-LAC) is limited by two first order shear zones juxtaposing it onto Ediacaran-Cambrian and Ordovician low-grade metamorphic units. Exhumation of the anatectic complex with a vertical uplift of 5 to 8 km was caused by a 65 to 100 km horizontal displacement induced by simple shear dominated transpression during the Variscan D₃ orogenic events [1]. Migmatites (metatexites and diatexites) are spatially associated with syn-tectonic Variscan two-mica, S-type granites, suggesting a genetic link. This hypothesis is here assessed using geochemical data.

Two distinct types of diatexites were recognized: a) Type-1 diatexites with fractionated HREE ($Dy/Yb_N = 2 - 5$) and SiO₂ usually below 74 wt% (down to 68wt%) and Eu negative anomalies; and b) Type-2 diatexites with unfractionated HREE ($Dy/Yb_N = 0.8 - 1$), SiO₂ = 73 - 75wt% and Eu positive anomalies. Overall, the syn-tectonic granites follow the same trends of diatexites in the Harker-type diagrams, with both types of rocks being characterized by Ti and Nb negative anomalies. They are similar to Type-1 diatexites in what concerns the HREE fractionation ($Dy/Yb_N = 2 - 5$) and the negative Eu anomalies, but clearly distinct from Type-2 diatexites when these important geochemical parameters are considered.

These new data suggest a clear genetic link between the syn-tectonic granites and Type-1 diatexites. Type-2 diatexites seem to be absent of granite counterparts and to be more evolved than Type-1 diatexites, as suggested by their higher SiO₂ content and Eu positive anomalies, but less fractionated (HREE flat patterns), which can hypothetically be accounted to melting of a distinct source [2].

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[1] Pereira *et al.* (in press) *J. Geol. Soc.*, 2017.

[2] Sawyer, 1998, *J. Petrology*, 39, 6, 1147-1167.