

Origin of pegmatites, example of Pyrenean Variscan pegmatites (Cap de Creus, Spain) : Preliminary results

J. SERRANO^{1*}, M. VAN LICHTERVELDE¹, M. DE SAINT-BLANQUAT¹, A.Y. BORISOVA¹, E. DRUGUET², E. GLOAGUEN³

¹GET, Univ. de Toulouse, Toulouse, France

(*correspondence : julien.serrano@get.omp.eu)

²Dept. de Geologia, Univ. Autònoma de Barcelona, Bellaterra, Spain

³BRGM, ISTO, Orléans, France

The formation and internal evolution of pegmatites has been largely debated in literature. However, few studies concern the origin of pegmatites, especially those pegmatite fields that are not related to granitic magmatism. In the Cap de Creus, the eastern end of the Variscan orogeny, metasedimentary rocks (more than 2 km in thickness) are affected by migmatization and intrusion of beryl-columbite-phosphate-subtype pegmatites [1]. The least fractionated bodies form large stocks of simple unmineralized pegmatite associated with the most deformed and highest-grade metamorphic units affected by migmatization. As for the most fractionated pegmatites containing abundant phosphate and rare-element minerals, they occur 2 km away from the anatectic domains in the lowest-grade metamorphic units [2-4].

Our study aims at constraining the granitic versus anatectic origin of the Cap de Creus pegmatites by coupling structural and petro-geochemical investigations of the different pegmatite types. Preliminary results are the following: 1) geostatistical analysis allows constraining the spatial distribution of the pegmatite occurrences; 2) correlation between pegmatite deformation grades and magmatic fractionation degrees allow establishing relative geochronology of pegmatite emplacement with respect to the main deformation phases (D1, D2 and D3); 3) In situ geochemical tools will be applied to accessory minerals (e.g. micas, tourmaline, garnet) in the pegmatites and their country rocks. Constraining the granitic versus anatectic origin of pegmatites may have important implications for elaborating exploration strategies through the Variscan in Europe.

[1] Alfonso P., Melgarejo J.C., Yusta I., Velasco F. (2003) *The Canadian Mineralogist* **41**, 103-116. [2] Druguet E. (2001) *Tectonophysics* **332**, 275-293. [3] Druguet E., Passchier C.W., Carreras J., Victor P., Den Brok S. (1997) *Tectonophysics* **280**, 31-45. [4] Carreras J. (2001) *Journal of structural Geology* **23**, 1457-1486.