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## **Preliminary results of Unidirectional Solidification Textures recorded by the aplite-pegmatites from Tres Arroyos (Badajoz, Spain) and the story they tell**

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One of the most characteristic attributes of pegmatitic rocks is their anisotropic fabric with a great variety of textures, including not only a broad range of crystal sizes, but also different types of unidirectional crystal growths such as the so-called Unidirectional Solidification Textures (UST). In the Tres Arroyos Pegmatite Field (Central Iberian Zone of the Iberian Massif), apart from comb-textures, the alternation of aplitic and pegmatitic layers (with variable modal proportions) parallel to the contacts with the host rocks occur commonly all across the pegmatitic dykes. The origin of the layering in these bodies is still enigmatic.

In the case of Tres Arroyos, the strong undercooling of the system could be produced by a combination of different factors, including a sudden drop of pressure favoring the exsolution of a fluxing components-bearing aqueous fluid from the pegmatitic melt, and a marked temperature decrease of the pegmatitic melt due to its intrusion into significantly colder host rocks. The reduced thickness of the studied dykes (average of 2 m) would promote to the development of nonequilibrium textures along the entire width of the dykes. The variation of the crystal size ( $\approx 2$ -3 orders of magnitude) through different layers constituting the dykes reflects changes in the nucleation density and crystal growth rate during crystallization. The occurrence of dykes with several alternating thin pegmatitic and aplitic layers could be the result of cyclical changes induced by the competition between crystal growth rate and nucleation rate. The simplest layering patterns observed in Tres Arroyos, with alternating quartz-rich and plagioclase-rich bands, or alternating lepidolite-rich and albite-rich layers, could be explained by a diffusion-controlled oscillatory nucleation model, whereas the understanding of more complex layering patterns would need a more comprehensive study.