

THE HYDROTHERMAL ORIGIN OF KYANITE BEARING VEINS IN THE HERCYNIAN REHAMNA MASSIF (WESTERN MESETA, MOROCCO)

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ABSTRACT: Petrologic and petrographic studies on the exceptional hydrothermal veins rich in silica, exposed at present days in the micaschist of hercynian Rehamna massif, show that the minerals assemblage is composed by kyanite and quartz. Textural analysis of these veins gives clear indications about its late character, moreover, their crystallising conditions can be likely ascribed to extensional shear or hydraulic extension fracturing, sealed by the precipitation of vein minerals from the hydrothermal fluid rich in silica. Their emplacement is interpreted as being contemporary with the pegmatites of late magmatism, the tourmalinite-veins, the greisen dykes, and the quartz veins which are mineralised in beryllium, rutile, white mica and other elements; they are considered as a result of late magmatic reactional process closely linked with a fluidal phase hydrothermal circulation, developed in the extension fractures system. In the field, the late character of extension fractures and the veining system is revealed by a clear unconformity with the regional foliation, which attributed mainly to a compressive tectonic event, responsible of a crustal thickening. From the analysis of associated microstructures, magmatic intrusion, metamorphic country rocks and the phenomenon of late magmatism, a new interpretation is proposed about the origin of kyanite-bearing veins: the synmetamorphic veining is related to the late hercynian extensional tectonics (late-orogenic extension). A mechanism of synmetamorphic veining, associated with late-orogenic extension, is proposed to explain rock failure and subsequent mineral deposition within veins.