

ZIRCON IN MIGMATIC ROCKS OF THE SOUTH CARPATHIANS (ROMANIA)

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Migmatic rocks are spread in a large area of the South Carpathians, occurring in the western part (Semenic Mountains) to the central (Sebes-Lotru and Fagaras Mountains) and eastern ones (Iezer-Papusa Mountains).

They are enclosed in different metamorphic series or tectonic units, their genesis being considered in connection with different geological events and phenomena, so that there are no an unitary opinion about their origin.

They are considered to be either: (i) metasomatic (Fagaras Mountains), (ii) generated by magmatic and metamorphic events, (iii) formed in tectonic conditions (ductile-brittle regime), having a granitoid protolith (Sebes Mountains), (iv) upper zone (cupola zone) of an anatexic granitoid body developed in lower parts of the crust (Fagaras Mountains).

Zircon, through its characteristics could help to elucidate some problems connected to the origin of the rocks, taken into account its well-known resistance to chemical and mechanical weathering.

Study of zircons from migmatites of South Carpathians, with special attention to their morphological and optical properties, tried to solve the origin of this type of rocks.

Morphologically, they mainly belong to the same type (S type), but a large variety of subtypes, each of them with very specific concentrations, have been observed.

In the northern part of the Sebes Mountains, S is the exclusive morphological type and G and P types accompany it in migmatites from the rest of the South Carpathians.

The most spread subtypes, found in the majority of investigated samples, are S₁₆ – S₁₇.

The proportion of S, G and P types is variable from west to east, the S type decreasing from the Sebes Mountains to the Iezer-Papusa Mts.

The same variations have been emphasized by the optical properties: the majority of crystals is light-dark pink, with a good and very good transparency; the light-dark brown crystals and those translucent ones are fewer in the western part of South Carpathians, but their number is increasing to the east, so that such kind of crystals is much more numerous in the migmatic rocks from the Iezer-Papusa Mountains.

Zoned or/and overgrown crystals are few and they are absent in the North Sebes migmatites.

Petrogenetically, the properties of zircons correspond mainly to crustal type, especially for zircons of the North Sebes migmatites, and this character decreases from West to East, so that in the Iezer-Papusa migmatites the mantle or mainly mantle component becomes predominant.