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A SYSTEMIC APPROACH FOR THE STUDY OF MIGMATITIC ENVIRONMENTS

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According to most of the researchers involved in studies on migmatitic fields, migmatites are complex petrographic environments consisting of at least two very distinctive rock types: the palaeosome and the neosome. This latter one, at its turn, is divided in leucosome and melanosome. Taking into account their very specific features, migmatitic rocks have to be considered complex petrologic systems, which can be assimilated with the theoretical model defined by the General Theory of Systems (GTS). Applying the main rules of GTS to a petrographic, namely, migmatitic environment, it becomes evident that the classical principles governing the GTS are valid also for the petrologic domain:

- the principle of **totality** allows to figure the migmatites as holding a plurality of petrografic subsystems, each of them representing a specific physical and chemical entity (i.e. palaeosome vs. neosome and leocosome vs. melanosome);
- the principle of **transformation** explains the mobility of the petrologic environment, the motion as a condition of the formation and evolution of the migmatic features;
- the principle of the **self-regulation** allows observing that the structural features, the mineralogical association and the chemical composition of the migmatitic rocks are the outcome of the feedback self-regulation mechanism where the main aims are the minimum energetic level and the entropic evolution.

The most profitable effect of applying a systemic approach on the migmatitic rocks is the mass-balance model, which can explain the mineralogy of the neosome, the specific microstructures of the leucosome and allows some genetical conclusions regarding an anatectic or metamorphic differentiation process.

The systemic approach is applied for the study of the migmatitic rocks from the Cibin area (South Carpathians, Romania). Genetically the most important component of a migmatitic rock, the leucosome, has nearly the same mineralogy as the granitic system. Usually, both potassium feldspar and plagioclase are present in the migmatitic leucosome, even if the participation ratio has different values. The results of the mass-balance studies prove a partially opened migmatitic system with an intensive fluid circulation. The results of the optical and the chemical investigation prove a relatively limited differentiation process of the crystallisation, the leucosomatic compositions corresponding almost to the **S-type** granites, except for the big pegmatitic bodies, which seem to be closer to the **I-type** granites.