

## **FOREIGN ECLOGITES IN GNEISSIC TERRAINS: A CASE STUDY IN THE SOUTH CARPATHIANS**

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Eclogitic rocks hosted in gneissic terrains are often a controversial matter as to their relationships with the host rock. The eclogites appearing in various middle- to high-grade metamorphic basement units of the South Carpathians (Romania) represent a very good, though rather one-sided, illustration of the topic. Mineral compositions and zonations document pressure gaps attaining as much as 2 GPa among eclogites and host rocks, while dissimilar peak conditions are common among eclogites themselves. Nevertheless, an evolutionary pattern clearly emerges from mineral phases, chemistry and zonations: continuous increase in Ca, Mg/Fe of garnet coexisting at first with amphibole, under increasing water activity, followed by Ca decrease and further increase in Fe/Mg during pervasive neoformation of pyroxene, under water activity equaling 1. Peak pressures correspond to a strong orientation of pyroxene and sometimes abundant phengite neoformation. Changes at peak pressure suggest intense percolation by fluids, tectonic weakening and detachment of the eclogites from the downgoing slab, followed by various mechanisms of incorporation in crustal rocks, such as convection, eduction or buoyant upraise. The ultimate stage of crustal incorporation concurs to involvement in thin-skinned tectonics leading to stratified metamorphic suites. While basically the question of coherence remains to be answered and its bearings assumed in each particular case, many eclogites hosted in gneissic terrains, as those in the South Carpathians, undeniably represent anisofacial inclusions, detached before the cessation of subduction and emplaced during syn/post-collisional tectonics.