Abstract

Study of the structural and metamorphic record of the eastern part of contact zone within Vepor and Gemer units in Central West Carpathians has interpreted the burial and exhumation in the evolution of alpine orogeny. The studied area is built by granitoid rocks of Vepor basement and metapelites of cover sequences both Vepor and Gemer units. Three structural fabrics have been identified in the area, which are correlated with so far described deformation stages.

Higher metamorphosed rocks with presence of two generation garnets were found out within lower metamorphosed metapelites of cover sequences. From the garnet – biotite thermometry the metamorphic conditions for the rims were established to 550-580°C. Whereas muscovite and in some case chlorite, are the only metamorphic phases in neighbouring cover rocks.

Three generations of white micas are documented within structural fabrics. The oldest muscovites, magmatic in origin (Ms1), younger phengites (Phg) present in fabrics S1 and youngest muscovites (Ms2) present in fabric S2.

The study of quartz microstructures distinguished aggregates and from aggregates coming band microstructures. These are mostly found in deformed granitoids, sometimes also in cover quartzites and can have sigma-shape geometry. The aggregate microstructure, representing S1 fabric, has bigger grain size and different shape preferred orientation than band microstructure, representing S2 fabric. The crystal preferred orientation of grains in aggregates registers thrusting, while grains in bands carry normal fault kinematics.

Shear bands, up to now considered to evolve synchronously, in this case have developed by two distinct deformation stages. The deformation producing fabric S2 reworked original anisotrophy S1 and created the shear band structure (SC’).

The S1 fabric is interpreted as a fabric originating at the first alpine deformation stage DA1 as a result of burial of Vepor unit, that has been caused by the northward overthrusting of Gemer unit. Second fabric S2 represents the stage of brittle-ductile unroofing, the escape of Gemer unit to the east, that caused the exhumation of Vepor unit. Third fabric S3 evolved during second alpine deformation stage DA2. Trans-gemer shear zone developed during this stage, that involved also marginal parts of Vepor unit. Higher metamorphosed rocks found near Hanková are interpreted as a segment of basement incorporated into the complex structure of cover rocks of contact zone during the complicated tectonic evolution of Gemer/Vepor contact zone.