During the Alpine tectonometamorphism the kinematic regime has changed from the transpression to the north-vergent compression-overthrust kinematics AD_1 (141-114 Ma) related to the closure of the Meliata-Hallstatt domain to post-collision unroofing kinematics in the phase AD_2 (107-82 Ma) and, finally, to the origin of conjugated shear zones trending NE-SW and NW-SE in AD_3 (75 Ma-recent).

During both orogenic processes the high pressure rocks and ultramafics were exhumed, recently occurring along the Rakovec and Meliata suture zones. A newly developed technology for the use of ultramafics in CO_2 liquidation has confirmed the effectivity 3 : 1 of the process, i.e. 3 tons of ultramafics liquidate 1 ton of CO_2. Revealed methodology of mineral sequestration (carbonatization) produces carbonates nesquehonite and hydromagnesite, being stable and safe for the environment. Technological research recommends to use studied ultramafics is for obtaining of Co, Ni, SiO_2 (optical fibres), Fe concentrate, $Mg(OH)_2$ fillings, basic heat-resistant building materials, and those for shielding of radioactivity.

The genesis of the magnesite and talc is a reflection of the complex, above described, Variscan and Alpine geodynamic processes. The magnesite has originated during Permoscythian post-collision (post-VD) and pre-AD_1 evolution. The talc is a product of Alpine tectonic overprint (shearing) and the fluid migration through the magnesite bodies in AD_1 and AD_2. The majority of occurrences of the magnesite and talc are located in the wider surrounding of the contact zone of Gemeric Unit with northern and underlying Veporic Unit. This magnesite is relatively rich in Fe_2O_3 (8-4 %), and the magnesite products (87.5-89 %) can reach the higher quality by the nitrate treatment (up to 99.5 % MgO). The main products of such treatment are $Mg(OH)_2$ and MgO. Technological research recommends using magnesite for the production of Mg and its compounds (brucite, periclase and $MgCl_2$). Another use of magnesite is in agriculture (the nitrogen fertilizer) and environmental protection (ecological sorbent). The industrial use of talc can benefit from improved methodology of flotation and milling. The flotation concentrates with the high fineness (50 % beneath 0.5 and 100 % beneath 3 micrometres) and brightness (above 90 %) are predestined as a high-quality filling into plastics, rubber, paper, paints and ceramics. The selectively exploited high-quality talc interbeds are used in cosmetics and pharmacy without necessity of flotation elaboration.

On the relationship between the Paleogene Magura Basin and Pieniny Klippen Belt sedimentary area –the Leluchów sections, a new approaches (Polish Outer Carpathians)

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The relationships between the Central Carpathian Paleogene Basin, Pieniny Klippen Belt and the Magura Nappe are still one of the most important questions, which should be answered.

It is essential for better understanding of the Paleogene paleogeography and evolution of basin located along collision zone of the Central and Outer Carpathian domains.

Our studies were focused on the contact zone between the Magura Nappe and Pieniny Klippen Belt, close to the Polish-Slovakian border. Between the Udol village in the west and Ruska Vola in the east, the Late Eocene-Oligocene, deposits overlap both the Pieniny Klippen Belt as well as the Magura Nappe. These deposits are known as the Ujak facies. According to traditional opinion the Ujak facies overlapped the Pieniny Klippen Belt, and are overthrust by the Magura Nappe. The best recognized Leluchów section of the Ujak facies are situated on the left bank of the Poprad River, in the contact zone of the Krynica Subunit of the Magura Nappe and the Pieniny Klippen Belt. Unfortunately in this section contact of the Magura succession with lower part of the Ujak succession is covered by thick slope deposits, up to 27 m. Recently, in this area three boreholes have been drilled, by the Polish Geological Institute.

Combining the field observation with core material, following sequence of deposits of the Magura and Ujak transitional zone can be revealed:

1) thick-bedded sandstones of the Piwniczna Member (Early/Middle Eocene) of Magura Formation,

2) thin-bedded flysch and red shales with Reticulophragmium amplectens (Mniszek Shale Member, Middle Eocene) of the Magura Formation,

3) few meters thick packet of grey-greenish and red marstone of the Sub-Menilite Globigerina Marls (Late Eocene-Early Oligocene),

4) at least, a 19 m thick dark brown and black Menilite Shales with horstone and tuffite intercalations (Oligocene),

5) a 25 m packet of thick-bedded muscovitic sandstones, an equivalent of the Poprad Member (oligocene) of Magura Formation,

6) dark-grey marly shales with intercalations of thin bedded calcareous sandstones of the Malcov Formation (Oligocene).

The studies conducted by us have shown that during the Late Eocene through the Oligocene the Klippen Pieniny Belt was a transitional zone between the Magura and the Central Carpathian basins.

Jurassic and Cretaceous tectonic evolution of the Sakar and Srednogorie zones, Bulgaria: $^{40}Ar/^{39}Ar$ mineral ages and structures

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We present new $^{40}Ar/^{39}Ar$ mineral ages from metamorphic, plutonic and volcanic rocks of the principally E-W striking the Sakar and Srednogorie zones, Bulgaria and use these ages together with structural observations to constrain the Jurassic and Cretaceous tectonic history of these zones along northern margins of the Rhodope massif. The Srednogorie zone seems to be particularly important because of its richness of magmatic rocks and associated ore deposits.

The Sakar zone SW of Topolovgrad exposes the Palaeozoic Sakar granite mantled by the metamorphic Laslovo Formation. Along the contacts between granite and their volcanosedimentary metamorphic cover, often shear zones developed with a mylonitic fabrics formed within upper greenschist to amphibolite facies-grade metamorphic conditions giving the structure an appearance similar to a mantled gneiss dome. $^{40}Ar/^{39}Ar$ amphibole and white mica dating yield ages ranging between 144 and 136 Ma constraining the age of the main tectonic event of ductile deformation within a deep crustal level at ca. the Jurassic/Cretaceous boundary. Further to the southeast, towards the Rhodope massive, younger white mica ages gradually decreasing to ca. 124 Ma were found in metamorphic rocks. A further, secondary thermal overprint was found in staircase Ar release patterns with a maximum age of a secondary thermal overprint younger than 69 Ma. Together, these ages indicate the principal age of the Sakar zone at the Jurassic/Cretaceous boundary, which predates the formation of the Srednogorie basin, and two stages of thermal overprint.

The Srednogorie zone comprises an Upper Cretaceous siliclastic marine infill of a volcanosedimentary basin and abundant volcanics, subvolcanics and shallow plutons. In the eastern Srednogorie zone, alkalic rocks are abundant. A new $^{40}Ar/^{39}Ar$ amphibole age of 82 Ma from a hornblende andesite from the Fakjijska river S of Sredec indicate an important stage of effusive volcanic activity. In contrast, the following ages from plutonic rocks are interpreted to date cooling through the Ar retention temperature, ca. 500–550°C for