

Svidnya plot in two separate time intervals: 315 – 305 Ma and 455 – 440 Ma (ID – TMS). Surprisingly LA – ICP-MS show considerable scattering, as the results cover very large time span: 840 – 388 Ma. Both ID – TMS and LA – ICP-MS for dyke rocks from Svidnya plot mainly in the interval 460 – 450 Ma. Perfectly concordant ID – TMS ages for the intrusive rocks from Shipka delineate two intervals: 555-506 Ma and 303 Ma. LA – ICP-MS determinations are grouped in several narrow intervals: 345-335 Ma, 319-326 Ma and 309-307 Ma. At the same time LA – ICP-MS data for dykes from the pluton show much older age: 462-454 Ma.

Ages as 450 Ma could not indicate the time of intrusion of plutonic rocks, because such ages are older than the host metasediments (Ordovician, Silurian and Devonian). Thus, Variscan ages in the interval 350 - 303 Ma would represent the time of formation of the potassic-alkaline rocks. This time interval is too large and it is not possible to determine precisely the position of these rocks in the frame of the Variscan orogeny. Very striking feature is the ubiquitous presence of inherited cores in the studied zircons. It was to some extent unexpected, because zircons are highly soluble in hydrous and peralkaline magmas (according to the experimental data). The fact, that were found complex zircons with strong inheritance even in most alkaline rocks is surprising and requires more attention.

Up to now rest unclear the relationships between the potassic rocks and the calc-alkaline granitoids, as well as the successiveness of magma formation. The results show that both rock types are generally contemporaneous, so they belong to one tectonic event. The marked differences in their composition should be attributed to the sources.

The zircons show a multistage origin, attesting for overlapping variable geological events. The frequent presence of inherited cores in the zircon testifies for multiple recycling of older material, involved in the generation of the potassic magmas. At this moment we are not able to specify the nature, origin and mechanism of involvement of these older materials in the source. The results show that material segregation from source and crystallization histories of the magmas were very complex.

Underground geotouristic routes in the Małopolska District

Dzięgiel M.

Upper Silesian High School of Business (GWSH), Katowice, Poland, md@ip.krakow.pl

In the Małopolska District two underground routes located in old mine workings have been opened to the public. They were developed in the Forecarpathian Basin, in the salt mines in Wieliczka and Bochnia. The salt deposits are hosted in Tertiary - Miocene formations accompanied by anhydrites, gypsum and clays. From the south, these formations are surrounded by the sandstones and shales (flysch), which belong to the Carpathian Foredeep. In both the salt mines in the tourists visit the old mine workings, mainly in the form of spacious chambers and galleries. In those mines the visitors experience a small boat trip across the underground sweet lakes. In Bochnia's salt mine visitors are also carried by the historical underground railway along 1km distance. Those salt mines are very popular underground health resorts. People ill of breathing system can spend there some time for inhalation.

Micas and clay minerals of muddy to clayey sediments from the Paleogene variegated shales, Polish Carpathians

Dziubińska B.

Institute of Geological Science, Jagiellonian University, Oleandry 2a, 30-063 Kraków, Poland, beata.dziubinska@uj.edu.pl

The research was carried out on shales and mudstones of the Hieroglyphic Beds in the eastern part of the Dukla Unit. Samples of shales and mudstones were examined using optical microscopy, X-ray powder diffraction (XRD) and scanning electron microscopy (SEM). The