First occurrence of rodingite in Central Serbia

Dušanić S., Tančić P. and Popović D.

Geological Institute of Serbia, Rovinjska 12, 11000 Belgrade, Serbia, dusanics@hotmail.com

During the field geological mapping and accompanied laboratory studies of the samples for the Basic Geological Map in the wider area of the town of Valjevo (Central Serbia) were distinguished serpentinites, gabbros, peridotites, andesites, diabases and amphibolites. In addition, at one locality within the area (i.e. the village of Danilović, site Suva česma), there was detected one unusual rock in the contact with serpentinite, which is in this paper further determined by the optical microscopic, XRPD and chemical methods, as rodingite.

Rodingite is characterized with a massive structure and granoblastic texture. It has mostly white color, with unevenly distributed concentrations of a green mineral.

Rodingite dominantly consists (over 80 %) of macroscopically white, microscopically transparent, and slightly anisotropic grossular, close to the end member with Grs98Adr2 composition. Grossular appears in a coarse-grain granular form, with size from 0.5 to 1.5 mm.

Green Mg-Al-Fe chlorite occupies interstitials between the grossular grains. This chlorite was most probably formed as secondary phase replacing pyroxene, which is preserved as relic pseudomorphic forms with size up to about 0.5 mm.

Up to now, there were not registered the appearances of such kind of rocks on the territory of Serbia. Nearest sites of rodingites have been previously registered in Bosnia and Herzegovina (11 localities from Brnača at NW to Rijeka at SE; belonging to the Outer Ophiolite Zone), and in FYR Macedonia (1 locality-Raduša; which belongs to the Inner Ophiolite Zone).

According to this classification, discovered rodingite in the area of Valjevo also belongs to the Inner Ophiolite Zone. It occurs in contact with gabbro and peridotite rocks, and most probably originated from veined gabbro by subsequently metasomatic processes.

Unraveling the time of formation of potassic-alkaline rocks in the Variscan edifice in Stara planina, Bulgaria: ID – TIMS and LA – ICP-MS study

Dyulgerov M.[1], Ovtcharova M.[2] and Schaltegger Urs.[2]

[1] *Department of Mineralogy, Petrology and Economic Geology, Faculty of Geology and Geography, SU 'St. Kliment Ohridski', Ttzar Osvovoditel 15, Sofia 1504, Bulgaria, momchil@gea.uni-sofia.bg*

[2] *Section des Sciences de la Terre, Université de Genève, Rue des Maraîchers 13, CH 1205Geneva, Switzerland, Maria.Ovtcharova@unige.ch, Urs.Schaltegger@unige.ch*

Vaiscan magmatism is ubiquitos in Western and Central Stara planina, Bulgaria. Its composition is calc-alcaline and essentially acid, as granitoids predominate. Occasionally but with outstanding position, in the Variscan orogenic edifice in the Stara planina, are the rocks of the potassic-alkaline association. From west to east three alkaline plutons crop out: Svidnya, Buhovo–Seslavtzi and Shipka. The plutons intrude Ordovician, Silurian and Devonian low-grade metasediments. The plutonic rocks comprise potassic monzonites and syenites, evolving toward peralkaline acid species (quartsyenite and granite). Based on the isotope and trace elements composition, an enriched source was supposed for the magmas. Their geodynamic position is assumed as postcollisional.

In order to establish the time of formation of the rocks from mentioned plutons ID – TIMS and LA – ICP-MS comprehensive study on zircons were performed.

ID – TIMS analyses for plutonic rocks (syenite) from Buhovo-Seslavtzi display clustering around 340 - 325 Ma, and no reliable isochrone can be defined. LA – ICP-MS analyses yield similar results: 350 – 325 Ma. For the peralkaline dykes from Buhovo-Seslavtzi ID – TIMS age determinations cluster in two time intervals: 318 – 312 Ma and 460 – 435 Ma, with a substantial discordance. LA – ICP-MS results for the dyke rocks are mainly in the interval 470 – 430 Ma, as one analysis gives 310 – 303 Ma. Intrusive rocks from

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 – TIMS and LA – ICP-MS for dyke rocks from Svidnya plot mainly in the interval 460 – 450 Ma. Perfectly concordant ID – TIMS 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