Mineral deposits of Czech Republic – Sofia University SEG Student Chapter field trip 2017

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Sofia University SEG Student Chapter has organized a field trip to Czech Republic between 23 and 30-th September 2017. The main purpose of the trip was to contribute the students understanding of the geological characteristics of Czech Republic, and to provide information about exploration history in this region, by visiting Mokrsko, Roudny, Krasna Hora, Jilove, Zinwald, and Krupka deposits. Field trip was held by participants of Sofia University SEG Student Chapter, Masaryk University Brno SEG Student Chapter, Bucharest University SEG Student Chapter and guest from mining industry. Field trip leaders were Prof. K. Bogdanov from Sofia University and students from Masaryk University Brno – Jakub Vyravsky, Lubomir Kyrc and Jakub Maly.

The Bohemian massif in Czech Republic represents one of the largest exposure of the European Variscan Belt, which hosts various mineral deposits types that has been explored since Middle Ages (Wertich et al., 2014).

During the first day we visited Mokrsko gold deposit, located in Psi Hory gold district, part of Central Bohemian region, 50 km south of Prague. Deposit is hosted at the contact zone of Variscan Sazava pluton and Neoproterozoic volcano-sediment complex of Jilove Belt. Mokrsko is represented by 3 main ore bodies – Celina, Mokrsko West and Mokrsko East (Fig. 1). The total reserves of this tree ore bodies are 120 t Au.

At the next day we visited Roudney gold deposit, related to the Drosendorf Unit. Geology in this region is represented by metamorphic rocks from Bohemian massif. First reports about mining in Roudney area are from 14-th century. Ore body is bordered by 4 brittle faults; gold mineralization occurs in veins, stockworks and impregnated altered rocks. The Au content varies between 4 and 5 g/t.

The next visited object was Krasna Hora Au-Sb deposit. Rocks from Krasna Hora are I-type granitoids, part of Central Bohemian pluton. Au-Sb mineralization occurs in veins, adjacent to lamprophyres, porphyrites and mylonite zone. The main ore mineral which contain gold is aurostibnite (Fig. 2). Last mining activity has stopped at such grades as 5.3 g/t Au and 1.9% Sb.

During the third day we visited Jilove gold district, area about 20 km² and mining history since 14-th century (Fig. 3). Rocks from Jilove district are also part of Central Bohemian massif. Ore mineralizations occurs in veins and stockwork bodies hosted in metamorphic rocks, volcano-sediments complex and I-type granitoids. There were found more than 80 gold ore occurrence at the territory of Jilove district.
At the next day we visited Cinovac-Zinnwald Li-W greissen deposit, situated at the border between Czech Republic and Germany. Geology of the region is represented by the rocks from Saxothuringian zone of Variscan orogene and Krušno hory/Erzgebirge granite batholith (Breiter, Seltmann, 1995). The highly differentiated albite-zinnwaldite granite in the apical part of the Cinovec intrusion hosts a quartz-zinnwaldite-topaz vein system with Sn-W mineralization. Thickness of the veins ranges from 0.2 to 2 m (Fig. 4). The veins are often surrounded by up to 20 m thick greissen with variable content of Sn and W. Moreover the ore body contains Li, Rb, Cs, and Sc.

Except Cinovec-Zinnwald deposit we have visited the Terra Mineralia museum (Freiberg, Germany) which is one of the most significant mineralogical museums.

During the last day we visited Cinovec-Krupka mining region. This area includes the eastern parts of Krušno hory close to the Czech-German border. Krupka tin deposit is associated with Late Carboniferous A-type granite plutons, part of Teplice-Altenberg Caldera (Eisenreich, Breiter, 1993). Two types of plutons are presented: biotite granite which forms Preselberg massif (NW of Krupka) and younger albite-zinnwaldite granite so called “Cinovec type”. All the Rb-Li, Sn-W and Mo mineralization is genetically linked to the second granite type. In the Krupka district, albite-zinnwaldite granite forms two prominent cupolas terminated by steep stocks with intensive mineralization.

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References