Acid Meta-Volcanic Rocks from Konradów Area (Stronie Series, Orlica – Śnieżnik Dome): Petro-Structural and Geochemical Characteristic

Irena WOJCIECHOWSKA, Małgorzata ZIÓŁKOWSKA-KOZDRÓJ and Piotr GUNIA
Institute of Geological Sciences, University of Wroclaw, pl. M. Borna 9, 50-204 Wroclaw, Poland

The Stronie Series in the area of Konradów is composed of variegated mica schists with subordinate interlayers of quartz-graphite schists, crystalline limestones, amphibolites and quartz – K-feldspar -plagioclase schists, also named as leptynites (Wojciechowska, 1972; Cwojdziński, 1979, 1983; Smulikowski, 1979). The latter horizon forms several mega-boudins in the Krowiarki Mts between Romanowo – Ołdrzychowice in the NW part and Stronie Śląskie in the SE. These light-grey or yellowish, fine-grained rocks showing striped, gneissose fabric were interpreted as quartzites (Kuźniar, 1960), Gierałtów type gneisses (Don, 1964), or blastomylonitic, microcline paragneisses (Butkiewicz, 1968). Wojciechowska (1976), basing on mineralogy and SiO_2/Na_2O+K_2O ratio characteristic for acid magmatic rocks, concluded that they may represent primary lavas, tuffs or tuffites.

A new petro-structural investigation of 6 samples of leptynites from Konradów area documents their fine- to coarse-grained granoblastic fabric. The dominant matrix is built of interfingering quartz-feldspar mass which surrounds bigger feldspar porphyroclasts, most often with partly preserved tabular habits indicating their primary, magmatic origin. A state of feldspar preservation is diversified. K-feldspars are weakly changed, while plagioclases are strongly altered, with ubiquitous inclusions of heavy minerals and tiny mica flakes. In all samples foliation is mainly defined by white micas, partly by chloritized biotites. Stripes of well recrystallised micas enclose feldspar porphyroclasts. Some of them are strongly deformed as evidenced by long, symmetric pressure shadows. Rare asymmetric shadows indicate limited effect of rotational, ductile deformation. Small amount of muscovites flakes positioned perpendicularly to the main foliation suggest their post-kinematic crystallization.

For geochemical analyses two samples from environs of Konradów and one from Romanów were selected. The bulk rock chemistry of studied samples shows that most of alkaline components were not removed from the system during deformation or recrystallisation. All obtained chemistry results reflect rhyolithic or rhyodacitic composition of primary protolith. The contents of trace elements plotted on ORG(IA) normalized multielement diagram show similar distribution profiles for all studied samples. They are characterised of K,Rb,Ba,Th enrichment and Ti, Zr depletion typical for a within plate enviroment. On the chondrite-normalized REE spider diagram the relative enrichment of LRRE with slight positive anomaly of Ce and strong negative anomaly of Eu content can be observed. Most probably these volcanic rocks originated by shallow level fractional crystallisation of variably enriched mantle source. Such process might be also associated with crustal contamination of primary melt, together with removing of plagioclases from the primary felsic melt.

The above presented rocks show many similarities with other acid meta-volcanics known from other parts of the Orlica – Śnieżnik Dome (Wojciechowska et al. 2001).

References

BUTKIEWICZ T., 1968. Crystalline schists in the Krowiarki Range of the Kłodzko Mts. *Geol. Sudetica*, 4: 47-113.

CWOJDZIŃSKI S., 1979. Objaśnienia do Szczegółowej Mapy Geologicznej Sudetów 1:25,000, ark. Krosnowice. Państwowy Instytut Geologiczny, Warszawa.

CWOJDZIŃSKI S., 1983. Objaśnienia do Szczegółowej Mapy Geologicznej Sudetów 1:25,000, ark. Stronie Śląskie. Państwowy Instytut Geologiczny, Warszawa.

DON J., 1964. The Złote and Krowiarki Mts as structural elements of the Śnieżnik metamorphic massif (in polish). *Geol. Sudetica*, 1: 79-117.

KUŹNIAR J., 1960. O warunkach występowania marmurów w północno – zachodniej części Krowiarek. *Kwart. Geolog.*, 4: 217-262.

SMULIKOWSKI K., 1979. Polimetamorphic evolution of the crystalline complex of the Śnieżnik and Góry Złote Mts in the Sudetes (in Polish). *Geol. Sudetica*, 14: 7-76.

WOJCIECHOWSKA I., 1972. Preliminary results of investigation on so-called "Quartzites" in the neighbourhood of Romanowo (Stronie Complex), NW part of Krowiarki (East Sudetes). *Bull. de l' Acad. Pol. des Sciences*, 20: 273-277.

WOJCIECHOWSKA I., 1976. Następstwo deformacji w metawulkanitach i łupkach łyszczykowych okolic Romanowa. In: Problem wieku deformacji serii zmetamorfizowanych Ziemi Kłodzkiej. Materiały Konferencji Terenowej Międzylesie. Wrocław, pp: 80-89.

WOJCIECHOWSKA I., ZIÓŁKOWSKA-KOZDRÓJ M. and GUNIA P., 2001. Petrography and geochemistry from the Skrzynka Dislocation Zone (Eastern Sudetes, SW Poland) – preliminary results. *Bull. of the Pol. Acad. of Sci. Earth Sciences*, 49: 1-11.