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SYSTEMATIC POSITION OF IGNEOUS ROCKS FROM THE NORTH-EASTERN MARGIN OF THE UPPER SILESIAN COAL BASIN

Abstract. The author has established a systematic position of the igneous rocks from the NE margin of the Upper Silesian Coal Basin, according to the classification currently recommended by the Subcommission on the Systematics of Igneous Rocks of IUGS (Le Maitre et al. 1989). Following this classification, the igneous rocks of the area in question are mainly represented by sodium basaltic trachyandesites (mugearites) and potassium basaltic trachyandesites (shoshonites), potassium trachybasalts, dacites and rhyolites (medium-K or high-K), granodiorites, and lamprophyres (semilamprophyres) of the minetta-kersantite range.

Key-words: igneous rocks, Silesia-Cracow area, TAS diagram, QAP diagram.

INTRODUCTION

The Palaeozoic igneous rocks from the NE margin of the Upper Silesian Coal Basin (USCB) were recognized in numerous boreholes — drilled mainly during prospection for ores — and in outcrops in the vicinity of Krzeszowice and — subordinately — Siewierz. They concentrate close to Myszków, Zawiercie, Pilica, Bębło and Krzeszowice (Fig. 1). These rocks build veins of various types, less frequently slightly bigger intrusions (bosses, stocks, laccolithes) and extrusive forms. Informations on them are dispersed in many papers and unpublished materials but it may be concluded that the rocks represent various basic, intermediate and acid varieties. They may be further subdivided into seven natural groups, and employing a general, informal or traditional nomenclature, may be determined as porphyries, diabases, lamprophyres (semilamprophyres), melaphyres, granitoids, hornblende rocks, and K-feldspar-quartz rocks. Considering the frequency of their occurrences, the porphyries are dominant, being

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followed by diabases and lamprophyres (semilamprophyres). A detailed nomenclature of these rocks is rather confusing as they were studied in various time ranges, and by many authors who used different classification schemes. Such a situation has induced the author to determining the systematic position of all the rocks from the NE margin of the USCB, studied in a more detailed way, according to the current recommendations of the Subcommission on the Systematics of Igneous Rocks of IUGS (Le Maitre et al. 1989). The author has been additionally spurred by a paper published by Wierzchołowski (1993) who dealt with the systematic position of volcanic rocks from the Sudetes, following the same set of rules of the Subcommission.

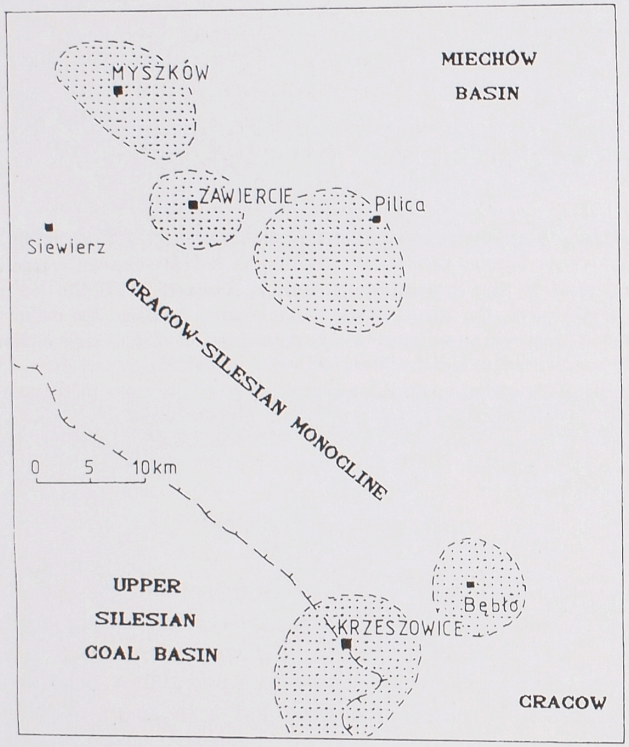

Fig. 1. The areas of concentration of igneous rocks in the NE margin of the Upper Silesian Coal Basin

In the classification of the volcanic rocks from the NE margin of the USCB the author has used the TAS scheme (Le Maitre et al. 1989) even through they have mostly been altered by various processes, and their chemical analyses in about 2/3 cases (out of a total of 174) do not fulfil the criteria of the TAS classification. Such an approach, however, was justified in the papers of Sabine et al. (1985), Kozłowska-Koch (1987) and Wierzchołowski (1993). The lamprophyre

rocks of the basement are equally altered and in many cases could not be precisely classified. However it has been possible to set the most unequivocal systematic position (based on the modal composition) for granitoids.

DIABASES

The Krzeszowice area

In this area diabases occur mainly in Niedźwiedzia Góra, where they form a sill. They have been were exploited since 1910 and, therefore, studied many times (Rozen 1909; Goetel 1921; Broder 1931; Gaweł 1953; Wolska 1984, and others). Intrusions of rocks resembling in hand specimens the diabases of Niedźwiedzia Góra were additionally found in boreholes in the vicinity of Zalas and Wielkie Drogi (Siedlecki 1954; Alexandrowicz, Gucwa 1964). The small occurrence of rocks defined as diabases, being accompanied by typical, vesicular melaphyres, is also known from Miękinia (Heflik 1960). Following his conclusion that they represent the massive portion of a melaphyre cover and not a separate extrusion, they have been included here into melaphyres.

The chemical composition of diabases from Niedźwiedzia Góra (Rozen 1909; Broder 1931; Stoch, Wyszomirski 1976; Wolska 1984, as well as the archival data of the Faculty of Geology, Geophysics and Environmental Protection, University of Mining and Metallurgy) places them in the TAS diagram mainly within the field of basaltic trachyandesites (Fig. 2A). They are represented both by sodium varieties (mugearites) and potassium ones (shoshonites).

The basement of the Silesian-Cracow monocline

The rocks, called with a traditional name „diabase"[2], were tapped in many places of the NE margin of the USCB, particularly in the vicinity of Myszków-Mrzygłód, Zawiercie and Wolbrom. The first informations are contained in papers of Ekiert (1957), Wieser (1957a,b), Bukowy and Cebulak (1964), Juskowiak and Ryka (1964), Bukowy and Ślósarz (1968), Ekiert (1971), Górecka (1972). Some syntheses were published by Ryka (1971, 1974) and Juskowiak et al. (1978). New results and shorter contributions on recent findings gave Harańczyk (1979, 1982a), Harańczyk et al. (1980), Bukowy (1982), Harańczyk and Wala (1982), Heflik and Muszyński (1983), Markiewicz (1984, 1994), Piekarski (1988), Muszyński and Natkaniec-Nowak (1989), Muszyński (1991), and others.

In the TAS diagram, the projection points of the chemically analysed diabases from the basement of the Silesian-Cracow monocline (Wieser 1957a; Ryka 1974; Heflik, Muszyński 1983; Muszyński, Natkaniec-Nowak 1989; Muszyński 1991) are gathered mainly in the fields of trachybasalts and basaltic trachyandesites

[2] Their slightly coarser-crystalline varieties, determined by Harańczyk (1979, 1982b) as diabase-gabbros or even gabbros, have also been included into this group.

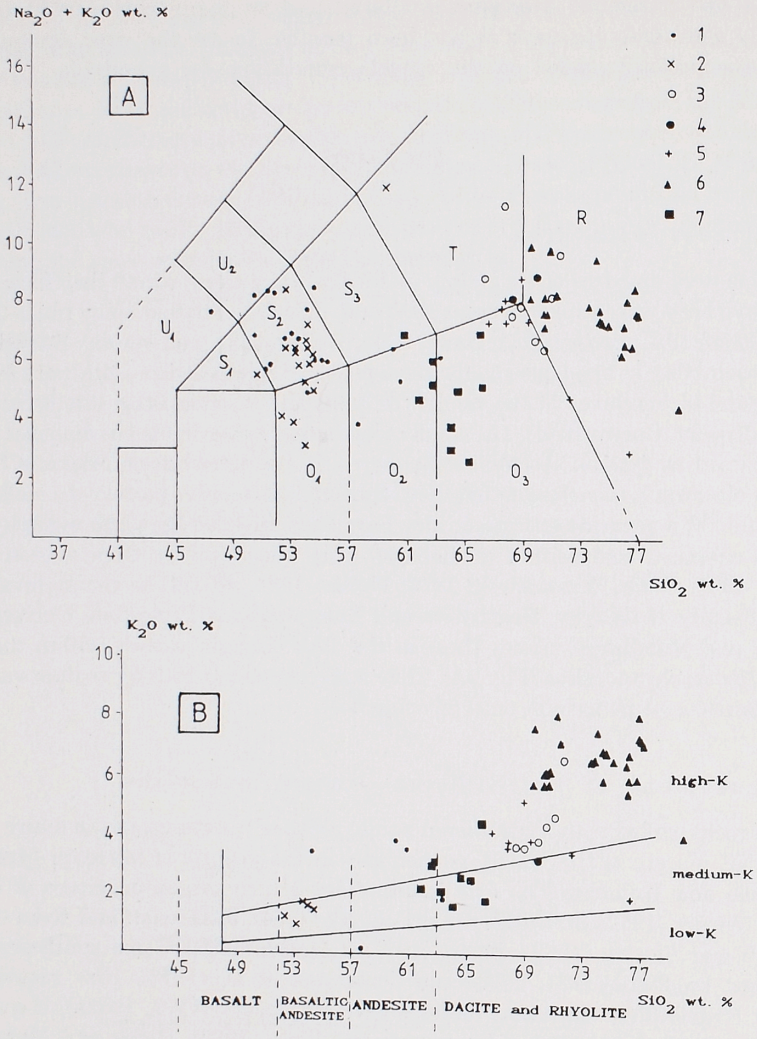

Fig. 2. The diagrams — essential TAS (A) and additional (B) ones — of the chemical classification of volcanic rocks (Le Maitre et al. 1989) with the projection points of the volcanites of the Krzeszowice area
1 — diabases; 2 — melaphyres; 3 — porphyries of the Zalas laccolith; 4 — porphyries of the Dębnik laccolith; 5 — porphyries of the major (i.e. lower) part of the Miękinia extrusion; 6 — K-feldspar-quartz rocks; 7 — hornblende rocks.
(The sources of chemical analyses were quoted in the text during the discussions of the distinguished rock types).
The fields of the A diagram: O_1 — basaltic andesites; O_2 — andesites; O_3 — dacites; R — rhyolites; S_1 — trachybasalts; S_2 — basaltic trachyandesites; S_3 — trachyandesites; T — trachytes, trachydacites; U_1 — tephrites, basanites; U_2 — phonotephrites

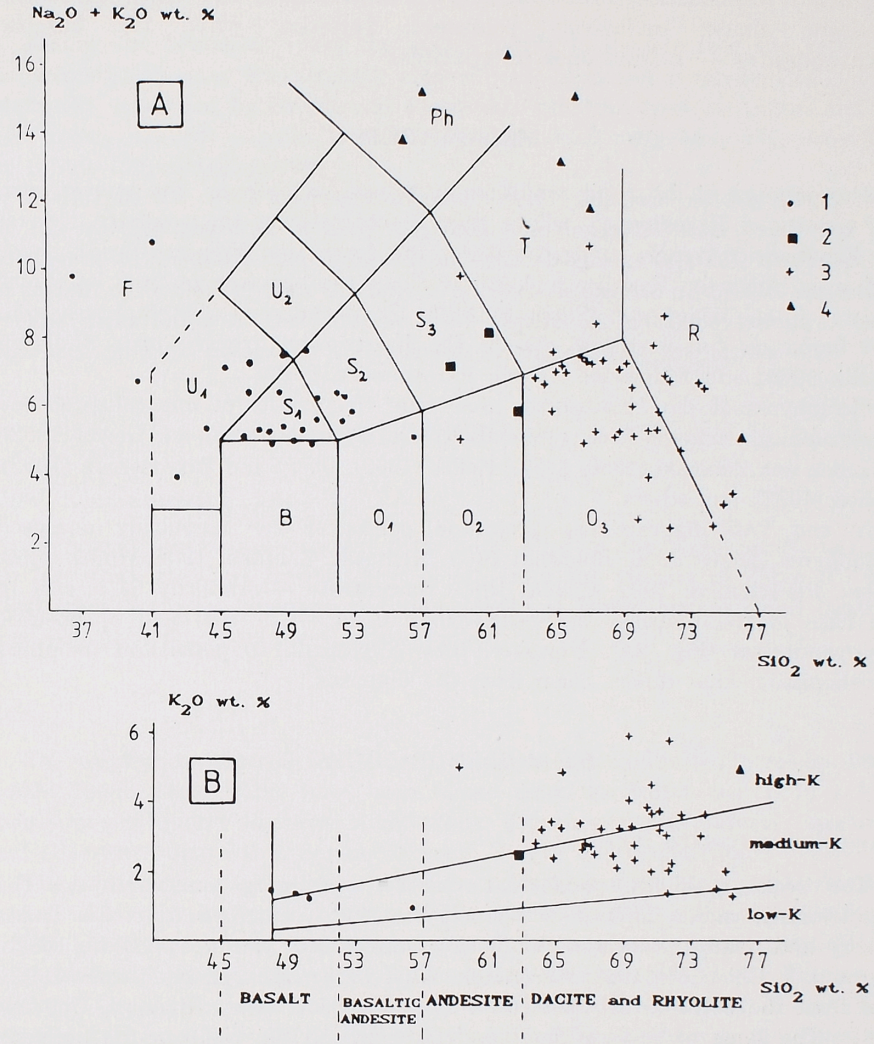

Fig. 3. The diagrams — essential TAS (A) and additional (B) ones — of the chemical classification of volcanic rocks Le Maitre et al. 1989) with the projection points of the volcanites of the basement of the Silesian-Cracow monocline
1 — diabases; 2 — hornblende rocks; 3 — porphyries; 4 — K-feldspar-quartz rocks.
(The sources of chemical analyses were quoted in the text during the discussions of the distinguished rock types). The fields of the A diagram: B — basalts; F — foidites; O_1 — basaltic andesites; O_2 — andesites; O_3 — dacites; Ph — phonolites; R — rhyolites; S_1 — trachybasalts; S_2 — basaltic trachyandesites; S_3 — trachyandesites; T — trachytes, trachydacites; U_1 — tephrites, basanites; U_2 — phonotephrites

(Fig. 3A). It has been found from the analyses of the alkalis that the trachybasalts represent almost exclusively potassium varieties, while the basaltic trachyandesites — sodium ones (mugearites).

MELAPHYRES

The outcrops of the rocks traditionally called „melaphyres" are known from the vicinity of Krzeszowice, where they concentrate on the southern side of the Krzeszowice trough, along the Hercynian depression Nieporaz-Brodła: near Rudno and between Regulice and Mirów. They are also known from boreholes situated in the same area (Siedlecki 1954). Small outcrops of melaphyres were also found on the northern side of the Krzeszowice trough, near Miękinia (Heflik 1960) and Filipowice (Oberc, Parachoniak 1962).

Melaphyres of the Krzeszowice area were the objects of mineralogical and petrographical studies of Rozen (1909), Bolewski (1939), Piekarska and Gaweł (1952), Michałek and Żabiński (1956, 1957), Heflik (1960), Oberc and Parachoniak (1962), Cichoń (1982), and others.

In the TAS diagram the projection points of the chemically analysed melaphyres (Rozen 1909; Bolewski 1939; Michałek, Żabiński 1956; Heflik 1960; Oberc, Parachoniak 1962; Cichoń 1982) concentrate — similarly as it was in the case of the diabases of Niedźwiedzia Góra — in the field of basaltic trachyandesites (Fig. 2A). However, they correspond to potassium members (shoshonites), what differs them from the diabases.

HORNBLENDE ROCKS

The Krzeszowice area

The rocks with the porphyritic texture, containing hornblende as the characteristic mafic mineral of phenocrysts, were described from the Dubie quarry and nearby „Zamczysko" hill (Kozłowski 1955; Harańczyk 1980, 1982b; Harańczyk, Chłopecka 1989; Harańczyk, Wala 1989a; Muszyński, Pieczka 1992), and from the borehole Karniowice 2a in Będkowska Valley (Bukowy, Cebulak 1964). The same rocks were found by Harańczyk (1980, 1989) in the borehole Zielona D-3 and within the rhyodacite laccolith in Zalas.

The projection points of these rocks, derived from the chemical analyses contained in the papers of Cebulak and Bukowy (1964), Harańczyk (1980), and Muszyński and Pieczka (1992), are rather widely distributed in the TAS diagram, covering the fields of andesites and dacites, and even encroaching into the field of trachyandesites (Fig. 2A). It results both from their primary differentiation and secondary alterations. The potassium content places these rocks within high-K and medium-K andesites, potassium trachyandesites (latites), and medium-K dacites, with the predominance of the latter (Fig. 2B).

The basement of the Silesian-Cracow monocline

Among the basement rocks the author tends to include into the group of hornblende-rich ones the strongly altered rock from the borehole Pz-31 near Mrzygłód, described by Heflik and Piekarski (1989) as trachyandesite, and — also partly altered — rocks from the borehole A-10 near Mrzygłód, classified as latites (Muszyński 1991).

In the case of the rock from the borehole Pz-31 its systematic position is supported by the features observed in hand specimen and under the microscope and the position of its projection point in the classification diagrams (Fig. 3A, B). According to current systematic criteria the rock in question belongs to medium-K andesites.

The rocks found in the borehole A-10 correspond in this systematic, as it has been said, to potassium trachyandesites, hence they are latites (Fig. 3A).

PORPHYRIES

The Krzeszowice area

Porphyritic rocks are exposed from both sides of the Krzeszowice trough. To the south they are known, first of all, from the vicinity of Zalas. To the north they occur in Miękinia and the vicinity of Dubie, and a small outcrop has also been found in the Czernka valley.

Zalas

The porphyries occurring here form a subvolcanic, laccolith-like intrusion (Dżułyński 1955). These rocks have been mined since the world war II in a big, mountain-side quarry in Zalas. Additionally, they crop out in natural exposures and abandoned quarries in Sanka, Frywałd, Baczyn and Głuchówka.

The mineralogical and petrographical characteristics of the Zalas porphyries are contained mainly in papers of Rozen (1909), Sutowicz (1982) and Słaby (1987).

The projection points of recalculated chemical analyses (Rozen 1909, Słaby 1987, the unpublished materials of the author, archival data of the Faculty of Geology, Geophysics and Environmental Protection, University of Mining and Metallurgy) occur between dacites and rhyolites (Fig. 2A), hence they may be generally classified as rhyodacites. The additional diagram specifies them as high-K dacites or high-K rhyolites (Fig. 2B).

Miękinia

Porphyries, slightly different from those found in Zalas, were exploited from 1852 to the sixties of our century in a big, mountain-side quarry in Miękinia. They build a vast extrusive form, whose top part is composed of the rocks determined here as K-feldspar-quartz ones and described in a further chapter.

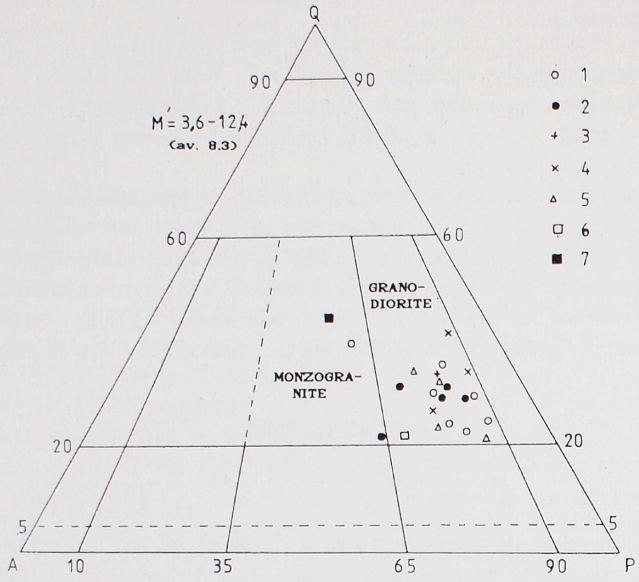

Fig. 4. The classification triangle of plutonic rocks (Le Maitre et al. 1989) with the projection points of the granitoids of the NE margin of the USCB (based on modal compositions)
1 — borehole WB-102A (Kośnik, Muszyński 1990; Wolska 1991); 2 — borehole Pz-5 (Kośnik, Muszyński 1990); 3 — borehole KH-1 (Wolska 1991); 4 — borehole WB-115 (Jaworski 1977, Wolska 1991); 5 — borehole DB-5 (Muszyński, unpublished materials); 6 — borehole ZMZ-100 (Heflik et al. 1977); 7 — a xenolith from the Zalas porphyries (Heflik, Muszyński 1993)

The porphyries of Miękinia were the subject of scientific interest already in 19th century. In the 20th century mineralogical and petrographical investigations were carried out by Rozen (1909) and Bolewski (1939), and more recently by Słaby (1990). Short contributions are contained in numerous other papers.

In the TAS diagram the projection points of the chemically analysed Miękinia porphyries from the major part of the flow (Rozen 1909; Bolewski 1939; Katalog 1961, archival own data and those of the Faculty of Geology, Geophysics and Environmental Protection, University of Mining and Metallurgy) are distributed in a similar way as the ones of the Zalas porphyries, i.e. between rhyolites and dacites (Fig. 2A). Thus, they may be also called rhyodacites. Considering their potassium content these rocks represent prevalently the high-K type (Fig. 2B).

Dębnik

A subvolcanic porphyry intrusion, probably of the laccolith type (Zajączkowski 1964; Bogacz 1980; Narkiewicz 1983), has been tapped in several boreholes between Dubie and Dębnik.

Short informations on the porphyry rocks of the Dębnik laccolith are contained in papers of Bukowy (1982), Harańczyk (1982b), Parachoniak and Wieser (1985), Harańczyk and Wala (1989a, b). These rocks have recently been studied also by the author himself (Muszyński, Pieczka 1994).

Out of two analysed rock fragments (Muszyński, Pieczka 1994), the less altered rock from the borehole Z-9 represents medium-K rhyolite and the other, with more advanced alterations, from the borehole Z-3 — trachydacite ($Q_n \cong 21$ wt.%) (Fig. 2A, B). Initially, the porphyry in question must have been close to dacite in its prevailing mass.

The basement of the Silesian-Cracow monocline

The rocks of the porphyry type belong to the most common igneous rocks found in boreholes in the discussed area. They are concentrated in the vicinity of Myszków, Mrzygłód, Zawiercie, Pilica and Bębło. Being so widespread they were studied many a time: Wieser (1957a, b), Ryka and Sylwestrzak (1960), Bukowy and Cebulak (1964), Juskowiak (1971), Pendias (1974), Parachoniak (1975), Mikrut (1977), Górecka and Nowakowski (1979), Juskowiak et al. (1978), Markiewicz (1984, 1994), Karwowski (1988), Muszyński (1991), and others.

In the TAS diagram, classifying volcanic rocks, the projection points of the chemically analysed rocks of this group (Wieser 1957a; Ryka, Sylwestrzak 1960; Bukowy, Cebulak 1964; Górecka, Nowakowski 1979; Harańczyk et al. 1980; Muszyński 1991, and the archival data of the author and those of the Faculty of Geology, Geophysics and Environmental Protection, University of Mining and Metallurgy) concentrate in the field of dacites and less common — of rhyolites (Fig. 3A). Considering their potassium contents, the dacites belong to the high-K type and rhyolites — to the medium-K one (Fig. 3B).

K-FELDSPAR-QUARTZ ROCKS

Among the igneous rocks of the NE margin of the Upper Silesian Coal Basin, their group rich in potassium stands apart (leaving for the time being lamprophyres). Taking into account the mineral composition of these rocks the author determined them as the K-feldspar-quartz rocks. They have been an object of scientific interest for many years because of their disputed genesis (Rozen 1909; Bolewski 1938, 1939; Piekarska, Gaweł 1952; Tokarski 1953; Gaweł 1957; Słaby 1987, 1990). Also the present author have studied them (Muszyński, Pieczka, in preparation), and shares the prevalent opinion on the decisive role of metasomatosis in their formation.

TABLE 1

Chemical and normative (CIPW) composition of K-feldspar-quartz volcanic rocks of the northen margin of the Krzeszowice through (wt.%)

Components	Samples							
SiO_2	68.85	74.10	72.10	67.60	67.15	66.60	66.15	65.90
TiO_2	0.50	0.12	0.53	0.70	0.75	0.75	0.33	0.42
Al_2O_3	15.90	14.15	13.58	17.31	17.65	16.81	13.65	15.00
Fe_2O_3	0.33	0.04	0.53	0.92	0.86	0.72	1.00	1.48
FeO	0.12	0.09	0.13	0.22	0.08	0.08	0.18	0.19
MnO	0.01	0.004	0.007	0.002	0.003	0.01	0.03	0.014
MgO	0.57	0.72	1.07	0.58	0.70	0.76	0.69	0.98
CaO	0.66	0.10	0.09	0.35	0.26	0.11	4.07	2.74
Na_2O	1.75	1.25	1.80	1.94	1.77	2.21	1.87	2.22
K_2O	7.61	6.50	7.26	5.77	5.37	7.19	5.27	5.40
P_2O_5	0.21	0.08	0.09	0.13	0.22	0.10	0.19	0.20
H_2O^-	0.42	0.54	0.88	0.83	0.64	1.11	0.65	0.87
H_2O^+	2.86	2.19	2.01	3.60	4.18	3.40	2.51	2.57
LOI	0.41	0.12	0.09	0.17	0.12	0.30	3.50	2.38
Total	100.20	100.00	100.17	100.12	99.75	100.15	100.09	100.36
Quartz (Q)	28.88	42.21	33.24	34.53	37.31	26.39	29.02	27.02
Ortoclase (or)	46.60	39.43	43.96	35.70	33.21	44.41	33.32	33.74
Albite (ab)	15.34	10.85	15.61	17.19	15.67	19.55	16.94	19.87
Anorthite (an)	1.97	—	—	0.93	—	—	14.22	13.00
Corundum (C)	4.23	5.31	3.00	7.90	9.68	5.78	—	1.06
Diopside (di)	—	—	—	—	—	—	3.97	—
Hypersthene (hy)	1.47	1.84	2.73	1.51	1.82	1.98	—	2.58
Ilmenite (il)	0.28	0.20	0.30	0.49	0.19	0.20	0.48	0.46
Hematite (hm)	0.34	0.04	0.55	0.96	0.90	0.76	1.07	1.57
Apatite (ap)	0.52	0.20	0.22	0.32	0.54	0.25	0.48	0.50
Rutile (ru)	0.37	0.02	0.39	0.47	0.68	0.68	—	0.20
Titanite (tn)	—	—	—	—	—	—	0.25	—
Wollastonite (wo)	—	—	—	—	—	—	0.25	—
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Analyses by Dr. A. Pieczka (Faculty of Geology, Geophysics and Environmental Protection, University of Mining and Metallurgy in Cracow); the calculations of CIPW norms in accordance with the rules of the TAS systematic division (La Maitre et al. 1989) by the autor.

Localization of samples: 1 — Miękinia (upper part of the flow); 2, 3 — Siedlec (old mine dump); 4, 5, 6 — Dubie (marginal part of a complex dike in the SW wall of the dolomite quarry); 7 — Szklarka (outcrop near the old national border); 8 — Szklary (shallow borehole near the artesia spring).

The Krzeszowice area

The members of this group, determined previously as so-called „kalified rocks", „potassium trachytes" or „potassium rhyolites", have been described so far from Siedlec (Bolewski 1938; Lewowicki 1959), Miękinia (Rozen 1909; Bolewski 1939; Słaby 1990), Dubie (Harańczyk 1982b; 1989), and also Zalas (Słaby 1987; Harańczyk 1989). Recently, they have been found

in two places within the Szklarka valley: in the well known outcrop of volcanic rocks, defined by Kozłowski (1955) as „Szklarka close to old border", and in 1988 in a shallow borehole in Szklary near the artesian spring (Muszyński, Pieczka, in preparation). Also the tuff of Filipowice corresponds to the rocks in question as far as its mineral and chemical compositions are concerned (Rozen 1909; Kuhl 1936; Tokarski 1953; Bolewski, Manecki 1970; Parachoniak, Wieser 1985).

The results of chemical analyses of the K-feldspar-quartz rocks were reported by Rozen (1909), Bolewski (1938, 1939), Lewowicki (1959) and in Katalog (1961). The results of more recent analyses are presented in Table 1. According to those data, the rocks from Miękinia, Siedlec, Dubie, the Szklarka valley (close to the old border), and Szklary (near the artesian spring) correspond to high-K rhyolites (Fig. 2A, B), following the current classification of volcanic rocks (La Maitre et al. 1989).

The basement of the Silesian-Cracow monocline

Among the basement rocks, the following ones may be included into the discussed group: the so-called potassium (sanidine) trachytes from Zawiercie (Manecki, Muszyński 1982), the so-called potassium rhyolites from the vicinity of Jerzmanowice and Będkowska Valley (Harańczyk 1982b; Harańczyk, Wala 1982; Muszyński 1991), and — probably — the so-called Gołonóg porphyry (Heflik 1961; Heflik, Połtowicz 1964).

In the TAS diagram the projection points of the rocks from Gołonóg and Zawiercie are situated in the field of trachytes and even of phonolites, while the rocks from Będkowska Valley — in the field of rhyolites (Fig. 2A). The latter, as the additional diagram indicates, correspond to high-K rhyolites (Fig. 2B).

GRANITOIDS

The Krzeszowice area

Granitoids are known within the studied area as few xenoliths, found in porphyries in the vicinity of Dubie (Siedlecki 1954; Kozłowski 1955; Gaweł 1955) and Zalas (Heflik, Muszyński 1993). The xenoliths suggest the presence of a granitoid intrusion hidden somewhere within the basement, probably of the same type and age as the described below intrusions, found in boreholes. The granitoid rocks of this hypothetical intrusion should represent leukomonzogranite as the results of petrographical investigations indicate (Gaweł 1955; Heflik, Muszyński 1993). Thus, it differs them in the systematic position from granitoids recognized in boreholes, as the latter — as a rule — are granodiorites (Fig. 3).

The basement of the Silesian-Cracow monocline

The rocks close to hypabbyssal granitoids have been found in the profiles of several boreholes in four areas: near Pilica, Zawiercie, Myszków-Mrzygłód, and in Będkowska Valley. These rocks form intrusive bodies of rather small sizes. Scattered data on granitoids are contained in numerous papers. The synthetic descriptions of the granitoids, based on the data published before 1989 and own investigations, was given by Kośnik and Muszyński (1990). More recent results were brought about by Muszyński (1991), Wolska (1991), Kośnik and Pieczka (1993), and Markiewicz (1994).

The quantitative mineral composition of granitoids from all occurrences corresponds in the IUGS classification to granodiorites (Fig. 3) despite their slight variability. Only in some sections, where the rocks were perthitized (Kośnik, Muszyński 1990; Muszyński 1991), they correspond to monzogranites. Finer varieties of these rocks may be determined as microgranodiorites, and in fragments — as micromonzogranites. The colour index, M, of the rocks in question varies in the range 3.6—12.4, being 8.3 in the average. The lowest M values characterize rocks clearly altered, i.e. those feldspathized and silicified.

Lamprophyres (semilamprophyres)

The occurrences of lamprophyres in the NE margin of the USCB are known, first of all, from the vicinity of Siewierz and Zawiercie. These rocks have also been found between Zawiercie and Cracow and — but already beyond the area in question — south and east of Cracow, and, additionally, close to Koniecpol and Miechów. Almost all of them but two occur in the profiles of boreholes. Out of these two outcrops, the exposure in Dziewki near Siewierz (Samsonowicz 1928) is currently unaccessible, and the other is situated in the Szklarka valley near Krzeszowice (Muszyński, Pieczka, in preparation).

The lamprophyres of the NE margin of the USCB are the subject of about 20 papers. The bibliography and synthesis on the knowledge of these rocks was published by Heflik et al. (1992).

From the studies conducted so far — despite their various ranges — it may be unequivocally concluded that all the lamprophyres are related in their systematic position. They represent in the current classification (Le Maitre et al. 1989) the group of calc-alkali lamprophyres and semilamprophyres from the minetta-kersantite family, with the minetta group rocks being prevalent (Heflik et al. 1992). It must be stressed, however, that the considerable degree of alterations of these rocks makes difficult the precise determination of their systematic position.

SUMMARY

The review of the igneous rocks from the NE margin of the USCB has allowed to divide them into seven fundamental, informal groups: diabases, melaphyres, hornblende rocks, porphyries, K- feldspar-quartz rocks, granitoids, and lamprophyres (semilamprophyres). According to the classification, currently recommended by the Subcommission on the Systematics of Igneous Rocks of IUGS (Le Maitre et al. 1989), the distinguished rocks represent respectively:

diabases — mainly basaltic trachyandesites [the Krzeszowice area: sodic (mugearites) and potassium (shoshonites), the basement: sodic (mugearites)] and potassium trachybasalts (the basement);

melaphyres — mainly potassium basaltic trachyandesites (shoshonites);

hornblende rocks — mainly dacites medium-K;

porphyries — mainly dacites (the Krzeszowice area: high-K type, the basement of the Silesian-Cracow monocline: high-K and medium-K) and rhyolites medium-K and high-K;

K-feldspar-quartz rocks — mainly rhyolites high-K;

granitoids — almost exclusively granodiorites;

lamprophyres (semilamprophyres) — mainly rocks of the minetta group.

REFERENCES

ALEXANDROWICZ S.W., GUCWA R., 1964: Pozycja geologiczna diabazu z Niedźwiedziej Góry koło Krzeszowic. *Spraw. Pos. Kom. Oddz. PAN w Krakowie* VII—XII 1964, 452—455.

BOGACZ K., 1980: Budowa geologiczna paleozoiku dębnickiego. *Rocz. Pol. Tow. Geol.* 50, 2, 183—208.

BOLEWSKI A., 1938: Skała przeobrażona z Siedlca koło Krzeszowic. *Rocz. Pol. Tow. Geol.* 14, 1—38.

BOLEWSKI A., 1939: Zagadnienie „kalifikacji" krakowskich skał magmowych. *Rocz. Pol. Tow. Geol.* 15, 42—76.

BOLEWSKI A., MANECKI M., 1970: Z badań mineralogicznych tufu filipowickiego. *Pr. Miner.* 23, 7—20.

BRODER J., 1931: Diabase von Niedźwiedzia Góra bei Krzeszowice und die begleitenden sie Gebilde. *Bull. Int. Acad. Pol. Sc.*, Cracovie, Ser. A, 1, 546—568.

BUKOWY S., 1982: Problemy budowy paleozoiku regionu śląsko-krakowskiego Przew. 54 Zjazdu Pol. Tow. Geol., 7—26.

BUKOWY S., CEBULAK S., 1964: Nowe dane o magmatyzmie antyklinorium śląsko-krakowskiego. *Biul. Inst. Geol.* 184, 41—95.

BUKOWY S., ŚLÓSARZ J., 1968: Wyniki wiercenia Bębło koło Ojcowa. *Biul. Inst. Geol.* 212, 7—38.

CICHOŃ G., 1982: Minerały wtórne w melafirach z Rudna koło Krzeszowic. *Pr. Miner.* 73, 1—55.

DŻUŁYŃSKI S., 1955: O formie geologicznej występowania porfirów zalaskich. *Biul. Inst. Geol.* 97, 9—38.

EKIERT F., 1957: Warunki geologiczne występowania skał magmowych w Mrzygłodzie w okolicy Zawiercia. *Kwart. Geol.* 1, 1, 106—112.

EKIERT F., 1971: Budowa geologiczna podpermskiego podłoża północno-wschodniego obrzeżenia Górnośląskiego Zagłębia Węglowego. *Prace Inst. Geol.* 66, 5—77.

GAWEŁ A., 1953: Jaspisy z diabazu Niedźwiedziej Góry koło Krzeszowic. *Acta Geol. Pol.* 3, 1, 1—32.

GAWEŁ A., 1955: Ksenolit głębinowej skały magmowej w porfirze z Siedlca koło Krzeszowic. *Biul. Inst. Geol.* 97, 103—113.

GAWEŁ A., 1957: Przeobrażenia porfirytu z Sułowa koło Wieliczki. *Rocz. Pol. Tow. Geol.* 27, 151—168.
GOETEL W., 1921: Kontakt diabazu z piaskowcem permskim na Niedźwiedziej Górze w Krakowskiem. *Spraw. P. I. G.* 1, 2—3, 269.
GÓRECKA E., 1972: Mineralizacja kruszcowa w utworach paleozoicznych północno-wschodniej części obszaru śląsko-krakowskiego. *Acta Geol. Pol.* 22, 2, 278—323.
GÓRECKA E., NOWAKOWSKI A., 1979: Ore deposits associated with acid intrusives and related rocks in the Zawiercie region. *Prace Inst. Geol.* 95, 97—108.
HARAŃCZYK C., 1979: Metallogenic evolution of the Silesia-Cracow Region. *Prace Inst. Geol.* 95, 109—132.
HARAŃCZYK 1980: Okruszcowany andezyt hornblendowy z Dubia. *Rudy Met. Nież.* 25, 6, 242—250.
HARAŃCZYK C., 1982a: Nowe dane do poznania kaledońskiego górotworu Krakowidów. Przew. 54 Zjazdu Pol. Tow. Geol., 90—101.
HARAŃCZYK C., 1982b: Magmatyzm okolic Dubia. Przew. 54 Zjazdu Pol. Tow. Geol., 124—127.
HARAŃCZYK C., 1989: Kominy wulkaniczne Zalasu. Przew. 60 Zjazdu Pol. Tow. Geol., 61—67.
HARAŃCZYK C., GAŁKIEWICZ T., SZOSTEK L., KUREK S., ROGOSZ S., 1980: Porfirowa i skarnowa mineralizacja Cu-Mo z Zawiercia. Cz. I. Budowa geologiczna. *Rudy Met. Nieżel.* 25, 11, 484—490.
HARAŃCZYK C., CHŁOPECKA A., 1989: Przeobrażenia skał komina andezytowego w Dubiu. *Przegl. Geol.* 6, 332—334.
HARAŃCZYK C., WALA A., 1982: Profile proterozoiku i paleozoiku, mineralizacja kruszcowa. Przew. 54 Zjazdu Pol. Tow. Geol., 127—132.
HARAŃCZYK C., WALA A., 1989a: Andezytowy komin wulkaniczny w Dubiu. Przew. 60 Zjazdu Pol. Tow. Geol., 67—71.
HARAŃCZYK C., WALA A., 1989b: Skarny magnezowe i marmury brucytowe grzbietu Dębnika. *Przegl. Geol.* 6, 330—334.
HEFLIK W., 1960: Charakterystyka petrograficzna diabazów i melafirów z Miękini. *Biul. Inst. Geol.* 155, 203—220.
HEFLIK W., 1961: Charakterystyka petrograficzna tzw. porfiru z Gołonoga. *Spraw. Pos. Kom. Oddz. PAN w Krakowie, I—VI 1960, 171—174.*
HEFLIK W., MUSZYŃSKI M., 1983: Zmienione diabazy z okolicy Zawiercia. *Kwart. Geol.* 27, 4, 709—722.
HEFLIK W., MUSZYŃSKI M., 1993: A granitoid xenolith from rhyodacites of Zalas near Krzeszowice. *Bull. Pol. Acad. Sc. Earth Sc.*, 41, 4, 201—205.
HEFLIK W., PIEKARSKI K., 1989: Trachyandezyt z okolic Myszkowa. *Zesz. Nauk. AGH — Geologia* 15, 4, 107—117.
HEFLIK W., POŁTOWICZ S., 1964: Nowe dane o tzw. porfirze z Gołonoga. *Spraw. Pos. Kom. Oddz. PAN w Krakowie* VII—XII 1963, 518—519.
HEFLIK W., MORYC W., MUSZYŃSKI M., 1992: Lamprophyres of the Silesia-Cracow Region. *Bull. Pol. Acad. Sc. Earth Sc.* 40, 1, 23—29.
JUSKOWIAK O., 1971: Petrologia kwaśnych skał magmowych z północno-wschodniego obrzeżenia Górnośląskiego Zagłębia Węglowego. *Kwart. Geol.* 15, 3, 705—706.
JUSKOWIAK O., RYKA W., 1964: Przeobrażenia skał magmowych z północno-wschodniego obrzeżenia Zagłębia Górnośląskiego. *Kwart. Geol.* 8, 2, 398—399.
JUSKOWIAK O., PENDIAS H., RYKA W., 1978: Skały magmowe w północno-wschodnim obrzeżeniu Górnośląskiego Zagłębia Węglowego. *Prace Inst. Geol.* 83, 73—78.
Katalog analiz chemicznych skał i minerałów Polski, 1961: Cz. II — 1951—1957. *Pr. Inst. Geol.* 26.
KARWOWSKI Ł., 1988: Ewolucja fluidów minerałotwórczych waryscyjskiej formacji miedziowo-porfirowej Krakowidów na przykładzie rejonu Myszkowa—Mrzygłodu. *Prace Nauk. Uniw. Śląsk.* 929, 1—89.
KOŚNIK I., MUSZYŃSKI M., 1990: Granitoidy z podłoża monokliny śląsko-krakowskiej — aktualny stan poznania. *Zesz. Nauk. AGH — Geologia* 16, 4, 89—120.
KOŚNIK I., PIECZKA A., 1993: Zawartość fluoru oraz niektórych innych pierwiastków śladowych w granodiorytach z podłoża monokliny śląsko-krakowskiej. *Spraw. Pos. Kom. Oddz. PAN w Krakowie* I—XII 1991, 35, 1—2, 288—290.

KOZŁOWSKI S., 1955: Intruzje porfirowe w grzbiecie dębnickim. *Biul. Inst. Geol.* 97, 39—102.
KUHL J., 1936: Tuf porfirowy z Filipowic (okolice Krzeszowic) jako tras. *Rocz. Pol. Tow. Geol.* 12, 241—254.
LEWOWICKI S., 1959: Trachit potasowy z Siedlca koło Krzeszowic. *Przegl. Geol.* 1, 32—34.
LE MAITRE R. W., BATEMAN P., DUDEK A., KELLER J., LAMEYRE J., LE BAS M. J., SABINE P. A., SCHMID R., SORENSEN H., STRECKEISEN A., WOOLEY A. R., ZANETTIN B., 1989: A classification of igneous rocks and glossary of terms : Recommendations of the International Union of Geological Sciences Subcommision on the Systematics of Igneous Rocks. Blackwell Scientific Publications, Oxford.
MANECKI A., MUSZYŃSKI M., 1982: Trachity potasowe z Zawiercia. *Kwart. Geol.* 26, 1, 45—57.
MARKIEWICZ J., 1984: Charakterystyka petrograficzna skał magmowych z rejonu Myszkowa—Mrzygłodu. *Kwart. Geol.* 28, 3/4, 770—771.
MARKIEWICZ J., 1994: Charakterystyka petrograficzna skał magmowych. Przew. 65 Zjazdu Pol. Tow. Geol. 191—195.
MIKRUT B., 1977: Wyniki badań petrograficznych skał magmowych z rejonu Myszkowa i Mrzygłodu. *Kwart. Geol.* 21, 4, 934—935.
MICHAŁEK Z., ŻABIŃSKI W., 1956: Z geochemii magmowców krakowskich. *Przegl. Geol.* 8, 373—374.
MICHAŁEK Z., ŻABIŃSKI W., 1957: Wyniki wstępnych badań geochemicznych krakowskich skał magmowych. *Biul. Inst. Geol.* 115, 149—161.
MUSZYŃSKI M., 1991: Żyły mineralne w skałach poddewońskiego podłoża monokliny śląsko-krakowskiej. *Zesz. Nauk. AGH — Geologia* 52, 1—129.
MUSZYŃSKI M., NATKANIEC-NOWAK L., 1989: Utwory dyferencjacyjne w diabazach z podłoża monokliny śląsko-krakowskiej. *Przegl. Geol.* 3, 134—139.
MUSZYŃSKI M., PIECZKA A., 1992: Hornblende andesites and dacites from Dubie near Krzeszowice. *Miner. Polon.* 23, 1, 43—60.
MUSZYŃSKI M., PIECZKA A., 1994: Porphyry of the Dębnik laccolith. *Miner. Pol.* 25, 1, 15—28.
MUSZYŃSKI M., PIECZKA A., in preparation: Potassium-bearing volcanic rocks from the northern margin of the Krzeszowice trough.
NARKIEWICZ M., 1983: Paleozoik dębnicki; nowe materiały i nowe koncepcje. *Kwart. Geol.* 27, 4, 852—853.
OBERC J., PARACHONIAK W., 1962: Melafir z Filipowic. *Rocz. Pol. Tow. Geol.* 32, 1, 57—70.
PARACHONIAK W., 1975: Przeobrażenia skał magmowych ze staropaleozoicznego podłoża z okolic Myszkowa. *Spraw. Pos. Kom. Oddz. PAN w Krakowie* I—VI 1974, 18, 1, 235—237.
PARACHONIAK W., WIESER T., 1985: The nature and origin of Filipowice Tuffs. In: Wieser T. (Ed.) — Carpatho-Balcan Geological Association XIII Congress, Cracow, Poland 1985. Guide of excursion 1, 16—22.
PENDIAS H., 1974: Charakterystyka geochemiczna skał magmowych północno-wschodniego obrzeżenia Górnośląskiego Zagłębia Węglowego. *Biul. Inst. Geol.* 278, 5—28.
PIEKARSKA E., GAWEŁ A., 1952: Heulandyt z Rudna koło Krakowa. *Rocz. Pol. Tow. Geol.* 22, 353—362.
PIEKARSKI K., 1988: Nowe dane o mineralizacji kruszcowej w utworach staropaleozoicznych na obszarze Myszków—Mrzygłód, NE obrzeżenia GZW. *Przegl. Geol.* 7, 381—386.
ROSZEK H., SIEDLECKA A., 1966: Wulkanity i osady permu nawiercone w Zbójniku koło Nieporaza (rejon śląsko-krakowski). *Rocz. Pol. Tow. Geol.* 36, 1, 23—40.
ROZEN Z., 1909: Dawne lawy Wielkiego Księstwa Krakowskiego. *Rozpr. Pol. Akad. Umiej.* Ser. III, t. 9 (49), 293—368 [wyd. 1910].
RYKA W., 1971: Petrologia zasadowych skał magmowych z północno-wschodniego obrzeżenia Górnośląskiego Zagłębia Węglowego. *Kwart. Geol.* 15, 3, 709—710.
RYKA W., 1974: Asocjacja diabazowo-lamprofirowa północno-wschodniego obrzeżenia Górnośląskiego Zagłębia Węglowego. *Biul. Inst. Geol.* 278, 35—69.
RYKA W., SYLWESTRZAK H., 1960: O porfirycie z Huty Starej koło Siewierza. *Kwart. Geol.* 4, 1, 45—53.
SAMSONOWICZ J., 1928: Lamprofiry okolic Iwanisk w Łysogórach i okolic Siewierza. *Pos. Nauk. Państw. Inst. Geol.* 19/20, 38—39.

SIEDLECKI S., 1954: Utwory paleozoiczne okolic Krakowa. *Biul. Inst. Geol.* 73, 1—415.
SŁABY E., 1987: Adularization of plagioclases with accompanying processes in rhyodacites from Zalas near Cracow. *Arch. Miner.* 2, 69—94.
SŁABY E., 1990: Adular z Miękini. *Arch. Miner.* 46, 1—2, 55—70.
STOCH L., WYSZOMIRSKI P., 1976: Surowce i technologia hutnictwa skalnego. *Pr. Miner.* 45, 1—76.
SUTOWICZ E., 1982: Albityzacja plagioklazów w porfirach permskich z Zalasu. *Arch. Miner.* 38, 1, 129—134.
TOKARSKI J., 1953: The problem of „kalification" of magmatic rocks in the region of Cracov. *Bull. Acad. Pol. Sc.* 1, 5, 205—209.
TOKARSKI Z., 1953: Surowce ceramiczne Polski. Przegl. Techn. 153—158.
WIERZCHOŁOWSKI B., 1993: Stanowisko systematyczne i geneza sudeckich skał wulkanicznych. *Arch. Miner.*, 49, 2, 199—229.
WIESER T., 1957a: Charakterystyka petrograficzna albitofirów, porfirów i diabazów z Mrzygłodu w okolicy Zawiercia. *Kwart. Geol.* 1, 1, 113—126.
WIESER T., 1957b: Pochodzenie budowy pasowej i wtórnych zbliźniaczeń na przykładzie plagioklazów skał magmowych Mrzygłodu. *Rocz. Pol. Tow. Geol.* 27, 1—4, 25—49 (wyd. 1958).
WOLSKA A., 1984: Skład petrograficzny i chemiczny diabazu z Niedźwiedziej Góry. *Przegl. Geol.* 7, 391—396.
WOLSKA A., 1991: Przeobrażenia hydrotermalne intruzji granodiorytowych z obszaru śląsko-krakowskiego. Ph. D. theses. Inst. Nauk. Geolog. Uniw. Jagiell.
ZAJĄCZKOWSKI W., 1964: Utwory dolnego karbonu i budowa geologiczna okolic grzbietu dębnickiego. Przew. 34 Zjazdu Pol. Tow. Geol., cz. II, 1—23.

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POZYCJA SYSTEMATYCZNA SKAŁ MAGMOWYCH PÓŁNOCNO-WSCHODNIEGO OBRZEŻENIA GÓRNOŚLĄSKIEGO ZAGŁĘBIA WĘGLOWEGO

Streszczenie

Skały magmowe NE obrzeżenia GZW znane są dzięki licznym wierceniom oraz powierzchniowym odsłonięciom w okolicy Krzeszowic i podrzędnie — Siewierza. Ich wystąpienia koncentrują się w okolicach Myszkowa, Zawiercia, Pilicy, Bębła i Krzeszowic (Rys. 1). Z dotychczasowych danych — rozproszonych w licznych publikacjach i materiałach archiwalnych — wynika, że różnicują się one w sposób naturalny na siedem zasadniczych, nieformalnych grup: porfiry, diabazy, lamprofiry (semilamprofiry), melafiry, granitoidy, skały hornblendowe i skały K-skaleniowo-kwarcowe. Autor ustalił pozycję systematyczną tych skał zgodnie z klasyfikacją aktualnie zalecaną przez Podkomisję do Spraw Systematyki Skał Magmowych IUGS (Le Maitre et al. 1989). W myśl tej klasyfikacji powyższe skały reprezentują odpowiednio:

diabazy — w przewadze bazaltowe trachyandezyty [okolice Krzeszowic — sodowe (mugearyty) i potasowe (shoshonity), podłoże — sodowe (mugearyty)] oraz potasowe trachybazalty (podłoże) (Rys. 2, 3);

melafiry — głównie bazaltowe trachyandezyty potasowe (shoshonity) (Rys. 2);

skały hornblendowe — w przewadze dacyty średnio-K (Rys. 2, 3),

porfiry — głównie dacyty (okolice Krzeszowic — wysoko-K, podłoże monokliny śląsko-krakowskiej — wysoko- i średnio-K) oraz ryolity średnio- i wysoko-K (Rys. 2, 3);

skały K-skaleniowo-kwarcowe — głównie ryolity wysoko-K (Rys. 2, 3);

granitoidy — niemal wyłącznie granodioryty (Rys. 4);

lamprofiry (semilamprofiry) — w przewadze skały grupy minetty.