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AGE RELATIONSHIP BETWEEN THE STRZELIN GRANITOIDS: AN EXAMPLE FROM THE SOUTHERN PART OF THE MASSIF

INTRODUCTION

Variscan granitoids are the youngest rocks in the Strzelin crystalline massif. Oberc-Dziedzic documented three episodes of their emplacement into metamorphic rocks (1991, 1999) represented by intrusions of tonalite and quartz diorite, biotite and two mica granite composition. The biotite granite was dated at 347 ± 12 Ma and the two mica granite yields the age of 330 ± 6 (Oberc-Dziedzic et al., 1996). According to Oberc-Dziedzic (1991, 1999), granodiorite forms small bodies in the southern part of the massif, which may represent an onset of magmatic activity. Nevertheless, this has not been proved as yet.

This paper focuses on granitoids encountered in boreholes (B-1 and B-2) drilled in the SE part of the massif in the vicinity of Bożnowice village.

PETROGRAPHY

Four varieties of granitoids were identified in the investigated drill cores. These are granodiorites, biotite tonalites, biotite-hornblende tonalites and two mica granites. Two varieties of pegmatites were also distinguished. However, only granodiorites and granites are exposed at the surface. Non-plutonic rocks in drill cores are gneisses (fragments of metamorphic cover of granitoids).

Granodiorites are coarse- and medium-grained, locally porphyritic, with a parallel alignment of biotite flakes. Both plagioclase and K-feldspar exhibit zonal structures. Granodiorites also consist of quartz, whereas zircon and apatite are accessories.

The biotite tonalites are fine-grained, with a parallel alignment of biotite and plagioclase. Plagioclase porphyrocrysts occur in fine-grained matrix consisting of plagioclase, biotite and quartz. The porphyrocrysts are characterised by strongly sericitised cores and recovered mantles. Clusters of several biotite blades are recognisable with unaided eye, fine-grained biotite also occurs.

The biotite-hornblende tonalites are fine-grained rocks comprising two varieties: dark and light. The dark tonalite is rich in hornblende, apatite and titanite, which are not common in the light one. Both varieties contain plagioclase and quartz. Their contact is abrupt but embayed and irregular. Veins of the light

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tonalite penetrate into the dark variety.

The granites are fine-grained and consist of quartz, K-feldspar, plagioclase, muscovite and biotite.

Both varieties of pegmatites are similar in structure and composition. They consist of quartz, K-feldspar, plagioclase and biotite.

DISCUSSION AND CONCLUSION

The biotite tonalites occur as rounded and angular enclaves in the granodiorites. Outer parts of the tonalites enclaves crystallised rapidly due to cooling. The 1-centemeter thick contact rim of non-porphyritic tonalite was formed around enclaves. Such a relationship between the granodiorite and biotite tonalite indicates that the former one is older and those rocks can be referred to as compound dyke from the paper of Fernandez and Barbarin (1991).

The contacts between granodiorites and biotite-hornblende tonalites were not noticed in the investigated drill cores. Thus mutual relations between those rocks cannot be determined.

Granites are the youngest rock types, which crosscuts all other rocks as veins few meters to several centimetres thick.

The first pegmatite variety occurs as fine veins within gneisses and they are crosscut by granodiorite veins. Thus, this variety is related to migmatization of gneisses and is older than plutonic rocks. The second one occurs as veins within granodiorites and are crosscut by granite. They were formed after granodiorite intrusion but earlier than granite emplacement.

Analysing borehole material we are able to distinguish three distinct episodes of magmatic activity: the granodiorite injection, followed by tonalite and granite injections.

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