

## Preliminary Data on Petrology and Evolution of Northern (Polish) Part of the Žulová Pluton

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The Žulová granite pluton is situated in the eastern part of the Fore-Sudetic Block, immediately north of the Sudetic Marginal Fault. Most of the pluton belongs to the Czech Republic. Within the 5 - 6 km to the north of the Czech-Polish border there occur isolated granite outcrops, forming the northernmost part of the pluton. The next granite occurrence to the north (Maciejowice north of the Otmuchowskie Lake) has chemical composition suggesting that it represents a separate magma chamber.

The granites occurring in Poland are overlain by gneisses of highly variable structure. The contacts of granite and the cover rocks are best exposed in the Kamienna Góra quarry. Granitic/pegmatitic veins locally containing andalusite occur within the distance of few metres from the granite.

The granites form two essential varieties in Poland. The first one is characterized by the presence of complexly zoned plagioclases with distinct resorption of some zones. Anorthite content of those plagioclases ranges from 35 % in cores to 12 % in rims. The second granite variety contains plagioclase crystals of relatively uncomplicated zoned structure, whose cores have no more than 15 % anorthite. That granite variety contains muscovite, the appearance of which suggests that it may be partly of primary magmatic origin. Muscovite occurs almost entirely as carapaced relics within plagioclase crystals. The second granite variety shows a more intensive post-magmatic water-induced alteration than the first one. Locally, the second granite variety contains sparse crystals of andalusite. Andalusite occurs as elongated groups of individual crystals, which suggests post-magmatic origin.

Geological relationships suggest that apical parts of the pluton are exposed in Poland. Chemical homogeneity of granite of

the first variety and numerous resorption traces in plagioclase suggest a relatively homogeneous magma chamber with vigorous convection. This type of chambers is typical for hot, high-level granite intrusions. The granite variety with feldspar of uncomplicated zoned structure represents magma which was more differentiated and enriched in water. These features are now reflected by relatively acid plagioclase composition and intensive post-magmatic rock alteration. It has intruded the upper part of the chamber at the late-magmatic stage. Intrusive liquid-type contacts of both granite varieties suggest that the second one originated from late-stage magma injections into the upper part of the magma chamber.

The presence of carapaced muscovite plates in the second variety of granite indicates (1) relatively high water activity in its parental magma and (2) beginning of magma crystallization within the muscovite stability field (provided the muscovite is a primary mineral, which has to be proved by its chemical analysis). The local presence of andalusite in the second granite variety as well as in veins around the granite is not an indicator of magma crystallization pressure, since (1) the andalusite in granite is probably a secondary mineral and (2) the veins may be younger than the main granite pluton. Thus, the crystallization of andalusite may be correlated with post-magmatic stage of the pluton development.

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