

BALL PEGMATITE FROM JELENIA GÓRA (KARKONOSZE MASSIF) – NEW OUTCROP

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Introduction

One of the most interesting rocks of the Karkonosze granitoid massif is so-called ball pegmatite. This rock was described for the first time by VON BUCH in 1802, and since that time until today it is of interest to researcher. The detailed description of the history of its discovery is given by KENNAN & LORENC (2008). From six ball pegmatite outcrops, described until 1941, only three of them were available at time. After the World War II until 2009 there was only one locality available (KENNAN & LORENC, 2008), despite searches (KARWOWSKI & KOZŁOWSKI, 1972).

In 2009, author found new ball pegmatite outcrop, unknown until now. In the following two years, two outcrops, missing after World War II were rediscovered. The new ball pegmatite locality was found near Jelenia Góra. It occupies an area few sq meters. Within the weathering crust, single orbs are found. In most cases the orbs are cracked, especially the relatively large ones. The orbs diameters vary from few to more than 30 cm. The biggest found specimen was 34 cm in diameter, but it was only part of an orb (core and a half of the mantle), which could reach even 50 cm in diameter.

Typical orb has concentric layer structure, in which one can distinguish: core, mantle and rim. The orbs cores are built with K-feldspar megacryst, often twinned, and few quartz crystals. Sometimes cores consist of porphyritic K-feldspar, quartz and aggregates of fine biotite flakes. Those aggregates build cores of big and very big orbs, occasionally middle-size orbs. Orb mantles consist of K-feldspar overgrowth poikilitic quartz, biotite, and less frequently of plagioclase. Rim is built with granophyre intergrowths of K-feldspar and quartz.

Orbs are cemented in two ways (i) by quartz-alkali-feldspar mass with biotite, similar to aplite or (ii) by pegmatite, which consists of euhedral crystals of quartz, K-feldspar, and albite? In contrast to pegmatite-type cement, which is present in most of specimens, poorly

preserved aplite-type cement was found only around few orbs.

Based on fluid inclusions investigations from ball pegmatite from Czarne KARWOWSKI & KOZŁOWSKI (1972) suggested that it was formed from aplite melt, which contained K-feldspar megacrysts. Rapid cooling and probably degassing of such melt, resulted in crystals growth around megacrysts.

Preliminary mineralogical studies revealed following accessory minerals: magnetite, ilmenite, cassiterite, fergusonite-(Y), aeschynite-(Y) or polycrase-(Y), fluorapatite, monazite-(Ce), cheralite, xenotime-(Y), titanite, zircon, and thorite. Among all identified minerals a presence of aeschynite-(Y) or polycrase-(Y) is worth mentioning. According to the author's knowledge none of this pair of isochemical minerals was described from Poland until now. Unfortunately, there is no method, based on chemical composition, which would allow to assign this grain to the aeschynite- or euxenite-group minerals.

Conclusions

The new outcrop of ball pegmatite has been found and two others considered as missing have been rediscovered. The rock is very interesting due to record size of some orbs as well as its mineralogical composition. Further investigations are needed recognize in details its mineralogical composition likewise better understand of its origin.

References

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