

## NEW GEOCHEMICAL DATA FROM THE "ÜBERGANGSPORPHYROID" AT THE STYRIAN ERZBERG

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This study deals with rock samples of the so-called „Übergangsporphyroid“ from a drill hole which was drilled in the Pressler Studs at the height of the Dreikönigs floor at the Styrian Erzberg as well as with typical rock samples of the Porphyroide complex (ANELLI-MONTI et al., 2014). The aim of this investigation was a geochemical study with the aim to obtain a more detailed knowledge of the rock matrix of the „Übergangsporphyroid“.

The geochemical data of the „Übergangsporphyroid“ show significant differences compared to those of the Porphyroide complex. Uniform geochemical profiles with respect to the main, minor, trace and rare earth elements are the characteristic of the studied Porphyroide samples. In contrast the geochemical data of the analysed samples of the „Übergangsporphyroid“ are characterized by strongly divergent values. Among other things it shows based on Zr/Ti to Nb/Y ratios, which were used due to the strong alteration of these rocks for the characterisation and classification to a volcanic type (WINCHESTER & FLOYD, 1977) an extreme chemical differentiation. While the Zr/Ti to Nb/Y ratio of the Porphyroide samples show a uniformly rhyodacitic/dacitic composition however the values of the „Übergangsporphyroid“ scatter from a rhyodacitic/dacitic to a rhyolitic to a trachyandesitic composition. A unique assignment to a distinct volcanic type is therefore not possible. Commonly the K/Rb ratio is an indicator of the degree of crystallization differentiation of a magma. In this case it is suitable as a proxy for representation the different rock chemistry and the strong differentiation within the rocks of the „Übergangsporphyroid“. The K/Rb ratio in the Porphyroide samples reaches up to about 100 in the samples of the „Übergangsporphyroid“, it is however on average at  $309 \pm 36$ . Moreover the presence of newly formed sericite as a result of a K-metasomatism is another characteristic of these rocks. This differentiation is superimposed by a clearly mapped and differently strong Ca-metasomatism which is reflected in a more or less intensive formation of calcite. In addition, an increasing transformation of the alkali feldspar crystals into microcline can be detected. The Na/K ratio confirmed this observation. The Na/K ratio of the Porphyroid is 0.4 while those of the „Übergangsporphyroid“ are characterized by values of  $0.06 \pm 0.02$ . This phenomenon is due to the result of a metasomatic alteration under slightly elevated PT-conditions. Initial analyses of rare earth elements confirm at least partially the previous geochemical findings.

The geochemical investigation results indicates that the rock matrix of the „Übergangsporphyroid“ in the area of the Styrian Erzberg is not only the result of retrogression of Porphyroid rocks but also external sources must be considered. Striking geochemical similarities to the series of the „Polsterquazit“ confirm this assumption.

ANELLI-MONTI, I., KLAMMER, D., SCHOLGER, R. (2014): *Pangeo Austria* 2014.

WINCHESTER, J.A., FLOYD, P.A. (1977): *Chemical Geology*, 20, 325-343.