

## HIGH Nb-Ta CONCENTRATIONS IN STREAM SEDIMENTS IN THE BOHEMIAN MASSIF (AUSTRIA): INDICATORS OF COLTAN MINERALIZATION?

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The Bohemian Massif is part of the European Variscan orogenic belt and, in its Austrian part, includes the Moravian and Moldanubian zones. The latter is characterized by polyphase low-P high-T metamorphism and emplacement of voluminous granitoids formed due to extensive crustal melting between ~330 to 300 Ma (Gerdes 2003; Finger, 2007). The syn- to post-orogenic granitoids are exposed in large composite plutons such as the South Bohemian Batholith (SBB) with its three main suites (Gerdes 2003): (1) Weinsberg type granites (331-323 Ma); 2) Eisgarn type granites (328-327 Ma); 3) young biotite-bearing I-type granitoids of Mauthausen type (317-300 Ma).

Stream sediment data from the South Bohemian Pluton often show elevated contents of Nb, Ta ( $\pm$  REE, Sn, W etc.). In order to clarify whether these higher concentrations are caused by concealed mineralization (e.g., Nb-Ta pegmatites) or only represent regionally higher background values we compiled geological data on Nb-Ta occurrences, did a GIS-supported re-processing of existing chemical data from the Bohemian Massif and studied stream sediments from three selected areas; i.e. north of Sandl, south of Weitra and in an area north of Heidenreichstein and Litschau. At each sampling site the fine fraction (SF) and a heavy mineral concentrate (SM) were collected; in addition three samples of granite eluvium were taken. Chemical bulk analyses were combined with qualitative and quantitative mineralogy (optical microscopy, MLA) and mineral-chemical studies (EMPA). By applying this multi-method approach it could be demonstrated that geochemical anomalies of Nb ( $\pm$  La, Ce, Sn, W etc.) in the Bohemian Massif reflect *different* sources and provenance. Some regional "anomalies" within the Weinsberg Granite (Sandl, Weitra) are caused by incorporation of higher contents of Nb and Ta in Ti oxides, especially in ilmenite, which become concentrated in the heavy mineral fraction of the stream sediments and reflect regionally higher background values. In contrast, anomalies in the Eisgarn granite, such as the one north of Litschau in the Rottal area, are caused by presence of distinct Nb-Ta-(Sn) phases. There, tiny inclusions of columbite-tantalite group minerals were observed within cassiterite as well as larger grains of columbite. We propose a flowchart allowing for discriminating these different sources that will be tested in future mineral exploration in this area.

FINGER, F. et al. (2007): J. Geosci. 52, 9-28

GERDES, A. et al. (2003): J. Czech Geol. Soc. 48, 53-54