

Comments of the reviewer

The paper is an interesting and in my judgement a courageous step towards a more detailed classification of leucogranites some of which are in a narrow genetic association with tin and tungsten deposits of felsic affiliation. It uses a geochemical approach to correlate three areas, two of which have a close metallogenic similarity (the Krušné hory-Erzgebirge, Cornwall).

My comments are intended to point out to the limits of such correlations and to express the reviewer's experience with the attempts to classify the granitoids in the Krušné hory-Erzgebirge metallogenic province as confronted with the interpretations given in this paper.

Practically all research workers studying granites in the Krušné hory and the Slavkovský les area based their classification on geological and petrological criteria developed as early as in the last century (two granite series, distinct petrological distinguishing features, textural distinctions). They used geochemical criteria as supplementary ones supporting well these observations. Most of them especially in recent several decades have noted the increase of SiO₂ and decrease of FeO, MgO and CaO in the course of magmatic evolution of granitic series from the older to younger members. Similarly they ascertained the general trend in the increase of lithophilic elements such as Li, Rb, F, Sn in the course of progressive magmatic evolution. As a result of these studies they interpreted either the existence of a continuity or discontinuity in the magmatic evolution of the Krušné hory batholith while petrochemical and trace element data indicated generally a linear, not interrupted trend in the dependence of one geochemical variable on another as also indicated by the present study.

The authors of reviewed paper used a different approach. They collected geochemical data on granites from the Krušné hory-Erzgebirge batholith available in the literature and separated the granites into groups G1 to G5 by using the statistical analysis. They employed the same line of treatment for correlation with the granites from the Cornish ore province.

The limits of the groups G1 to G5 became, in my opinion, artificial. They are generally not supported by the variation of geochemical values within single intrusive phase or in a genetically closely related group of intrusive phases. This approach must lead to numerous overlappings as it is also documented by the data in this paper.

While the groups G1 and G5 appear to be well defined by contrasting values, the G2 to G4 granites may have different position in the evolution series if defined by geological criteria or by the treatment of geochemical data.

For example the granites of the Blatná granite body well geologically and petrologically defined as belonging to the Younger Intrusive Complex (YIC) and the Nejdeč YIC granites fall in the same G2 group as the granites of the Fláje body assigned as the Older Intrusive Complex granite and the Kfely granite and the Selb granite in the Fichtelgebirge which are "transitional granites" in the Fiala's definition. Similarly the classification of the Schellerhau granite with the G5 granites does not differentiate it clearly from the Cínovec granite which is a typical "G5" group granite built up by lithium mica albite granite. The uncertainty is also shown when comparing the granites from the Krušné hory metallogenic province and from the Cornish tin province, where an open question still exists which earliest Cornish granite is equivalent to the Krušné hory-Erzgebirge granite.

The reviewer is of the opinion that the geological approach should not be abandoned as the main criterion even in the treatment of geochemical data. Petrological types of granites representing discrete pulses of magmas appear to be geochemical units which with their chemical variations offer the apparent continuity of magmatic evolution of the whole magmatic system. Their geological boundaries are the true boundaries of geochemical groups rather than the types of rocks defined solely on the basis of geochemical criteria. Texturally similar granites may have been developed in the same sequence in individual bodies within the same province and in different provinces, yet their chemical composition may not be identical.

Despite of my scepticism over the validity of some interpretations I think that some definite new knowledge can be gained from the present treatment. It is e.g. the presence or absence of some granites with distinct petrochemical composition such as apparent absence of "the G1 granites" in SW England and the presence of "the G5 granites" in both provinces. It is the overall existing trend of differentiation which holds both for barren and ore-bearing granites.

My admiration goes to the comprehensive comparison of the Krušné hory-Erzgebirge and Cornish provinces by other than geochemical criteria, something what has not been done so thoroughly in the past and to which the present paper gives a clear description.

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