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Research Topic: I. Mineral systems and isotope geochemistry

Chapter 13. Mineralogical mapping and prognosis for garnet deposits in Sakar Mt, SE Bulgaria (O. Vitov, N. Tzankova)

In connection with a prospecting for garnet deposits for abrasives, a mineralogical dividing of Sakar Mt was made and a prognosis for garnet deposits was compiled based on stream-sediment pan-concentrated archive data [49]. The stream-sediment samples showed a strong correlation between the garnet, gold and galena.

The following rocks were sampled and a heavy-mineral concentrate was obtained from each of them: two-mica and muscovite schists near Orlov dol; magnetite- and garnet-containing schists near Hlyabovo village; garnet-staurolite two-mica schists near Oreshnik village; amphibolites near Planinovo village; a two-mica schists near Dervishka mogila village.

The mineral composition of the rock samples and the chemical composition of the collected garnets were examined. The garnets from monomineral fractions were studied by a goniometer and morphometrically (measurement of a, b, c axes).

Estimation of morphometric coefficients, statistical data processing and classification of garnet crystal forms were performed after Zingg by use of the GARNET program written for this study.

It is established that the studied garnets are of almandine type. The morphometric data show a relationship between the regional synmetamorphic deformation and the garnet crystal habit. The ductile deformed garnets ($b^2=ac$) lay on the main diagonal on the Zingg diagram (Fig. 1), the tabular garnets - along the $b/c=1$ axis, and the elongated crystals - along the $c/a=1$ axis. The figurative points on the diagram within the field between both axes belong to deformed and elongated garnets. The relict garnet crystals fall in point $a=b=c$.

In conclusion, the detailed mineralogical examinations of garnets from Sakar Mt and the ascertained spatial regularities point to presence of economic almandine deposits, complex gold-almandine placers and metamorphic base-metal mineralizations.

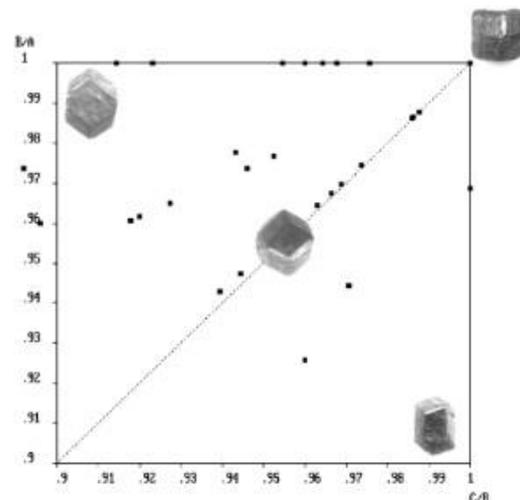


Fig. 1. The studied garnets on the Zingg diagram.