GEOCHEMICAL ASPECTS ON THE HIGH-TEMPERATURE SKARNS FROM ORAVIȚA (ROMANIA)

GHINEȚ, C.[1]*, MARINCEA, Șt.[1], BILAL, E.[2] & IANCU, A.M.[1]
[1] Geological Institute of Romania, 1 Caransebes Str., RO-012271, Bucharest, Romania
[2] Centre SPIN, Ecole Nationale Supérieure des Mines de Saint-Etienne, 158, Cours Fauriel, F-42023 Saint-Etienne Cedex 2, France
* E-mail: ghinet.cristina@yahoo.com

Beside the similar skarns from Cornet Hill, Măgureaua Vaței (Cerboaia Valley) and Ciclova (Țiganilor Brook), the Oravița–Crișenilor Brook skarn is one of the very few occurrences of high-temperature skarns in the world. It occurs at the very contact between a dioritic body of Upper Cretaceous age and carbonaceous sequences of Mesozoic age. The presence of a calcareous protolith favored the formation of the high-temperature calcium-silicate mineral species.

The studied skarns are dominated by the presence of gehlenite (up to 98% from the volume of the rock) associated with monticellite, grandites, ellestadite-(OH) and scarce spurrite. The late-stage metasomatic replacement of gehlenite by vesuvianite and clintonite is common as a result of late hydrothermal processes, as well as its replacement by some OH-silicate phases as hibschite, thomsonite, 11 Å tobermorite and allophane due to the late hydrothermal and weathering processes.

The chemical components of the system within which the pyrometasomatic processes took place are very numerous. In this case, according to the mineral species and the major elements analyses, they can be limited to the Si–Ca–Al, Si–Ca–Mg and Si–Ca–Fe geochemical systems. As it was expected, the inner skarn zone is described by the quartz-plagioclase-clinopyroxene system, characterized by the values of Al_2O_3 and TiO_2 in good agreement with the values of the same elements in the magmatic intrusion. The outer skarn zone can be assumed to a geochemically Al-poor and Si- and Mg-rich system. The extensive development of the garnet-vesuvianite skarn indicates an open thermodynamic system marked by a series of complex post-magmatic processes, which further leads to the formation of the silicate minerals with a more complex structure (e.g., clintonite and clinochlore).