Trace-elements content of sphalerite and associated minerals in Stari Trg Pb-Zn deposit, Trepča, Kosovo

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The Stari Trg Pb-Zn deposit belongs to hydrothermal metasomatic type, formed by intensive Miocene syncollisional magmatism in the SE Dinarides. The geological structure is complex, consisting of an anticline plunging at about 40ºNW, with a prominent volcanic breccia pipe along the hinge of the asymmetric anticline. The core of the anticline consists of Triassic carbonates and is surrounded by sericite schist. Two major types of mineralization are represented by hydrothermal and skarn parageneses. The main ore minerals are sphalerite, galena, pyrite and pyrrhotite.

On-going investigations of sphalerite point to high Fe content (11.9±0.9 and 10.4±0.4 wt % in hydrothermal and skarn parageneses, respectively). Cd content (2420±70 ppm in skarn sphalerite; 2380±420 ppm in hydrothermal sphalerite) and Zn/Cd ratio (232 in skarn sphalerite; 230 in hydrothermal sphalerite) are in concordance with data published for other skarn-hydrothermal Pb-Zn deposits [1]. Sphalerite and pyrite from skarn parageneses are enriched in As comparing with hydrothermal minerals.

Arsenopyrite (38 atomic % Fe, 34 atomic % As, 28 atomic % S) is found only in skarn parageneses. The temperature of formation for skarn parageneses at 360°C is estimated from the chemical composition of arsenopyrite co-existing with pyrite [2].

The formation pressure of 1.2 and 2.5 kbar for hydrothermal and skarn parageneses, respectively, were determined on basis of sphalerite composition in equilibrium with pyrite and pyrrhotite [3].

References

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