FAHLORES COMPOSITION AS A CRITERION OF DIFFERENCE BETWEEN GUMBEITE AND BERESITE-LISTVENITE ASSOCIATIONS OF BEREZOVSK GOLD DEPOSIT, URALS

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It was believed formerly, that ore minerals of classic Berezovsk Au-galena-sulphovismutide deposit of Urals belongs to beresite-listvenite association (Kutyukhin, 1946; Borodaevskij et al., 1984 and others). There was created a zoning pattern of Berezovsk deposit according to fahlores composition (Chesnokov, 1973).

For nowadays it is determined, that 6 individual ore-metasomatic associations take place there: quarts-tourmaline, Cu-propylite, propylites, gumbeites, beresites-listvenites, argillizes. Gumbeites and beresites-listvenites are wide spread; they are plutonogenenic hydrothermal carbonated mid-temperature metasomatites, similar in composition associated ore-quartz veins. Gumbeites are more high temperature pyrite-carbonate-K-feldspar-quartz metasomatites, sheelite deposits and Au occurrence are connected with them (Matveev, 1928; Korzhinskij, 1955; Spiridonov&Filimonov, 1998 and others); beresites are pyrite-carbonate-muscovite-quartz metasomatites, sheelite occurrence and Au deposits are connected with them (Borodaevskij&Borodaevskaja, 1948; Spiridonov, 1995 and others).

Gumbeites and associated carbonate-quartz and quartz veins are spread among the outline of Berezovsk deposit (Kedrovskoe and Shartashskoe sheelite deposits) and within its boundaries (in one case they are separate bodies, in other – inclusions around ore bodies of beresite formations). Veins content sheelite, hematite, pyrite, fahlores, galena, sphalerite, bournonite, Ag-Cu-Pb-Bi sulfosalts, tetradymite, altaite, aikinite, hessite, high probe gold 950-850; Au content is < 0.5 ppm. Fahllores are Sb-tennantite and As-tennantite, contained Ag (up to 3 wt.%), Bi (up to 3.6 wt.%), Te (up to 1.2 wt.%), increased ratio Cu\(^{2+}/(Fe+Zn+Cu\(^{2+}\)) up to 45%.

Beresites-listvenites and associated carbonate-quartz and quartz veins with sheelite, pyrite, galena, chalcopryite, fahlores, aikinite, cosalite and high probe gold 960-840 are pervasive. Fahllores are tennantite, Sb-tennantite, rarely As-tennantite, poor in Bi (<0.4 wt.%) and Te (<0.15 wt.%) with low Cu\(^{2+}/(Fe+Zn+Cu\(^{2+}\)) ratio (<5 %).

On plot Bi (in wt.%) versus Te (in wt.%) fahllores of gumbeite and beresite-listvenite associations form personal fields. Fahllores of gumbeite veins are increased Cu\(^{2+}/(Fe+Zn+Cu\(^{2+}\)) ratio under increased fO\(_2\), which is correlated with hematite presence in the veins.

Study deposits zoning according to minerals composition should be conducted fixing metasomatic association belonging.

Chesnokov B.V. (1973) Endogenic zoning of Berezovsk deposits, Middle Urals// Reports AS USSR. V.210, pp.915-917.