

## **GUMBEITES AND PHYSICO-CHEMICAL CONDITIONS OF THEIR FORMATION**

SEREDKIN, M.V. Lomonosov Moscow State University, Moscow, Russia.

Gumbeites belong to meso-lowtemperature plutogenic metasomatites. Metasomatites of gumbeite formation were described by D.S. Korzhinskii as apogranitoid carbonate-mikrocline metasomatites occurring near quartz-scheelite veins of Gumbeykoye deposit (South Urals, Russia). Modern investigations distinguish three typical varieties of gumbeites: 1) biotite-calcite-feldspar facies formed at 440-400 grad. C, 2) dolomite-biotite-feldspar facies original gumbeite (400-320 grad. C) and 3) phengite-calcite-feldspar facies (320 grad. C). E.A. Dunin-Barkovskaya described a rare gumbeite facies with tremolite in some deposits of Uzbekistan. Gumbeites of the biotite-calcite-feldspar and dolomite-biotite-feldspar facies form independently on  $K_2O$  chemical activity. Appearance of phengite-calcite-feldspar facies is determined by temperature and  $K_2O$  chemical activity. This facies was formed instead of dolomite-biotite-feldspar facies at decreasing temperature and  $K_2O$  chemical activity. The gumbeite stability field of phengite-calcite-feldspar facies expands with temperature decreasing. Mutual relations of gumbeite metasomatites and relative beresite metasomatites (usual mineral association of which is sericite-carbonate-chlorite) represent the greatest interest. Metasomatites of gumbeite family seem to be formed at higher  $K_2O$  chemical activity (main factor) and higher temperature, than beresite metasomatites. Gumbeite metasomatites are usually connected with potassium granitoids (syenodiorites, syenites, monzonites), as beresites - with potassium-sodium granitoids (granodiorites, diorites, tonalites). Gumbeites are often accompanied with tungsten and bismuth-arsenic mineralization.