

Paper Number: 2054

Western Tien Shan Geodynamic zoning and Minerageny

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Tien Shan mountains westward of the Talas-Fergana fault is represented by three large complexes that form metallogenic belt: Middle Tien Shan (Chatkal, Kurama and Pskem ranges); South Tien Shan (Turkestan ridge, spurs of Alay, Nurata and Kyzylkum mountain uplift and Sultanuvays); South-Western Tien Shan (Hissar, Zeravshan ridges and Karatube, Zirabulak, Ziaetdin, Kuldzhuktau hills).

Paleozoic folded complexes with the same zonation plunges to the west, under the Mesozoic-Cenozoic sedimentary cover, forming the foundation of Epipaleozoic Turan plate. Nurata and Kyzylkum uplands are the foundation outcrops from under cover as a result of the Alpine epiplatform orogenesis. The main volume of the ore mineral resources is associated with the folded basement rocks, and non-metallic deposits are concentrated in the sedimentary cover.

Middle Tien Shan is represented by Paleozoic active margin of the Kazakhstan microcontinent. Three groups of magmatic formations (S_4 - D_1 ; C_{1-2} ; P_1) are productive in copper, gold, silver, iron, lead, zinc, uranium and fluorite. Kalmakyr (Cu, Au) is the largest deposit of this region.

South Tien Shan is represented by divergent fold-thrust belt, formed as a result of the closure of Turkestan paleoceanic basin. Structurally, it is represented by series of Caledonian (O - S_1) and Hercynian (C_2) accretionary complexes, separated by carbonate section (D - C_2) and covered with molasses (P_1). Fragments of ophiolite present as part of the accretionary complexes.

This belt has a gold concentration. Deposits are confined to suture zones of tectonic covers and steeply dipping shear zones of collision stage (C_2 - P_1). The genesis of the most of large fields are treated as long-

term and multi-stage. Volcano-hydrothermal activity in the field of spreading zones of Turkestan paleocean creates an initial concentration of sulphides nonferrous and precious metals and defined metallogenic specialization of the region. Metamorphism and hydrothermal processes during subduction accretion of oceanic sediments in the Cambrian, Ordovician and Early Silurian ensure the formation of new productive parageneses forming their complex combination. Collision in the Late Paleozoic and accompanying magmatism are responsible for the remobilization of the ore material and formation of the large clusters in suture zones of fold-thrust belt. The largest Muruntau deposit is controlled by Caledonian thrust stage area.

South-Western Tien Shan is represented by Paleozoic northern margin of Karakum microcontinent with Ordovician volcanism and Silurian and Lower Carboniferous carbonate formation, complicated by volcanogenic rift belt (C1-2). Rift conditions were the most favorable for the formation of the large lead and zinc deposits (Khandiza) in the shoulder of the Hissar rift in the area of acidic volcanism

The Mesozoic and Cenozoic mineralization processes are occurring in the intercontinental environment. Most clearly manifested mineralization periods are J₁₋₂ - brown coal and kaolin (Angren), J₃ - potassium salts (Tyubegatan), K₂ - the uranium with a wide range of associated components, P - celestine (Sherabad), oil shale with an extensive set of valuable components (Baysun and many others), phosphorites (Jeroy-Sardar), and finally, N-Q - oxidized uranium-vanadium ore.

