Geological Characteristics and Origin of Kurument Iron Ore Deposits in Kyrgyzstan

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1 Survey of Deposit

Kurument iron ore is located on the north shore of the Naryn River that in the middle of Jaytim Mountains belong to Kyrgyzstan Narynskaya Oblast. Ore bodies are distributed in the range of 3200 meters from east to west, north-south width of 700 meters, a total of 8 iron ore bodies, estimate the amount of iron ore reserves about 2.5 tons. Deposit is located in the core of the middle of Tianshan Caledonian fold belt. The ore field tectonic is simple, fold and fault structures are not developed. The iron deposit occurs in the Proterozoic group belongs to the upper Sinian system Dequn Jaytim metamorphic clastic sedimentary sequence.

2 Mineralization Features

Ore bodies occur in clastic sedimentary rocks, ore hosting rocks general thickness of 500 to 1000 meters, along the strike extension more than 40 kilometers, ore-body’s attitude is consistent with the wall rock. The ore bodies are stratiform like, quasi stratiform, or lenticular, with a trend of 310°~330°, dip of north or North East, and dip angles are from 65° to 86°. There are 8 ore bodies in total, 7 of them are hosted in the rock stratum,1 small ore body occurs in the fracture zone, the length varies from 325-2780 meters and 3-104 meters wide.

The productive formation and wall rock all contain clay, lithic sandstone, siltsone, petite siltsone, and sericite-phyllite etc., ore bodies are in the coarse-fragment rock and micro-clastic rock, mineral district clastic sedimentary thickness attenuation and granularity diminution from west to east, ore bedding is stable, and ore bodies grade is increased. General magnetite or hematite with pelitic siltstone, chlorite phyllite formed interlayering. Part of blocky ores is mixed with muddy, muddy and magnetite with uniform distribution. Chlorite phyllite and siltstone in onyx blocky ores present thick millimeter level strata and primary iron banding. There are also distributed pisolithic intraclast and phacoidal magnetite in detrital sediment bedding.

The ore mainly consists of magnetite and hematite, and a small amount of specularite distribution part of orebody (usually less than 5%), some pyrite, chalcopyrite. The ore shows dense block structure, stripe blocky structure, disseminated structure, banded and impregnation-structure, fine-grained structure, granoblastic texture, metasomatic texture. The SiO₂ content in the ores from 35% to 56%, total Fe is 23% ~ 51%, Al₂O₃ is 1.6% ~ 7.0%, TiO₂ is 0.3% ~ 0.6%, P₂O₅ is 0.18% ~ 0.83%, MnO is 0.07% ~ 0.1%, S is 0.008% ~ 0.06%; trace elements Sb, Bi, Cu, and Mo content is low. The main vein minerals are quartz, chlorite, and calcite. Minor minerals are sercite, biotite, diopside, actinolite, epidote, zircon, and barite etc.

3 Origin of Deposit

Ore-forming geological feature show that the iron ore for sedimentary deposits. The wall rock of compositional maturity and textural maturity is high, the deposition of inclined bedding and pisolithic magnetite, hematite intraclast ore shows that the sedimentary environment is deeper water, but the water body with higher energy. Bimodal volcanic rocks and carbonate are distributed in ore body substratum, presumably formed in a rift-type shallow sea. After the formation of sedimentary deposit, regional metamorphic differentiatio, iron and muddy uniform mix complicated differentiation in the primary sedimentary process, resulting in the formation of relatively pure chlorite seams (layers), layers and magnetite layers. The southern area of the Naryn River
developed in a Variscan stage granodiorite, may be affected by the magmatic hydrothermal, or dynamic metamorphism along a fault-structural fracture and formed spiegeleisen veins and magnetite veins in the ore body; therefore, the origin of deposit type belongs to sedimentary-transformation one.

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