

CHENG Guangguo, ZHANG Kechuan, WANG Baoguo, YI Aiwen and WANG Wei, 2014. Metallogenic Geological Characteristics of the Manley Hematoxylin Copper-Gold Deposit, Omnogovi Province, Mongolia. *Acta Geologica Sinica* (English Edition), 88(supp. 2): 4-5.

Metallogenic Geological Characteristics of the Manley Hematoxylin Copper-Gold Deposit, Omnogovi Province, Mongolia

CHENG Guangguo, ZHANG Kechuan, WANG Baoguo, YI Aiwen and WANG Wei

NO.7 Geological Team, Non-ferrous Metals Geological and Mineral Resources Bureau of Henan Province

1 Introduction

Manley hematoxylin copper-gold deposit is located in Omnogovi Province, Mongolia, about 420 km to Ulan Bator along NW 355 °. The district is located in Madey - mandah porphyry copper (gold) molybdenum metallogenic belt which is important on the southern Mongolia and the mining area is still under exploration.

The main exposed strata consist of volcano rock and volcanic sedimentary rocks of Devonian, Carboniferous, Permian. There developed three groups fractures, NE, NW and EW direction fracture in mining area, and the EW direction fracture is the main fault which control the output of magmatite and ore body in this area.

Granite, granite porphyry and granodiorite are the mainly magmatite. The granodiorite is calc alkaline. Through the study of field geology, petrology, petrochemistry, trace elements and REE characteristics, the rare earth elements is similar to the andesitic rocks and it shows that two sorts of rocks have homology. This shows various degrees of enrichment that trace elements relative to primitive mantle, such as Cs, Rb, Th, U are 100 times higher than that of the primitive mantle, while Li, Nb, Tb, Y are relative loss. The granodiorite falls into the volcano arc granite range from the trace element tectonic setting.

2 Characteristics of Mineralizing Alteration Belts or Orebody

There are three types of mineralization types, quartz vein, porphyry and altered rock.

Quartz vein: distributed in the mining area in South Central granite, now 7 copper-gold deposit has been

found, ore minerals in copper gold minerals, ore body thickness about 0.15–11.90 meters long, about several meters to two hundred meters. Silicification, malachite are often seen and azurite, visible local natural gold can be seen in some area. The highest ratio of metal element Cu 1.35%, Au 2.4 g/t from groove, Cu 6.32%, Au 13.7 g/t from picking up samples.

Porphyry type: distributed in the mining area of the South Western granite vein, width about 5–10 m, length of 900 m, nearly EW direction. The ore minerals are composed of chalcopyrite, malachite and chalcopyrite and malachite as micro fine disseminated uniformly distributed in the partial neutral granite body, zoning obviously. The grain size is fine, chalcopyrite particles the naked eye is less visible, malachite naked eye observation is quite obvious, grade is relatively lower, copper grade analysis in 0.10–0.26%, the highest is Au 2.46 g/t.

Altered rock type: distribution in the northern mining area away from the rock of the position, the tectonic altered rock type is main type, there are 5 larger vein which width from 2 to 130 meters and length from hundreds meters to 10 km, the EW direction fracture developed. It can be seen obviously silicification, limonitization and carbonatization, the highest gold grade is 12.1 g/t from picking sample, generally 1–5 g/t from trenching and drilling sample.

3 The Mineral Structure and Texture

There are many structures such as solution structure, metasomatic relict texture, residual structure, xenomorphic granular structure; there are many textures such as veinlet disseminated texture, soil texture, crusty texture and gel texture, veinlet disseminated texture, veinlet and disseminated texture in ore.

* Corresponding author. E-mail: 785944804@qq.com

4 The Wall Rock Alteration

There are silicification, greisenization, carbonate alteration, and silicification often as zonal distribution; carbonatation often showed vein; there is greisenization between rock and stratigraphic.

5 Geochemical Characteristics

The distribution of debris, primary halo geochemical anomalies in the area and surface mineralization quartz veins, mineralized veins and tectonic altered rock zone coincide well, combination and associated anomalies set well. The Cu, Pb, Zn, Au, As element combining anomaly in south central reflects the granodiorite surface relatively intensive enrichment of copper gold quartz vein mineralization of ore-forming elements; W, Sn, Bi, Mo, Cu, Ag, Au element composite anomaly in South West reflects the enrichment of surface mineralization

granodiorite veins of ore forming elements; Au, Ag, As, Sb, Hg elements combination anomaly reflects the enrichment of surface mineralization tectonic altered rock zone area of ore-forming elements.

6 Metallogenic Model

Three metallogenic models have been summarized based on the three different types in the ore controlling factors, the mineralization, ore genesis: the first is the occurred in porphyry copper and gold deposits in the granodiorite body, the second is occurred in the rock and wall rock contact zone altered rock type copper gold deposit, the last one is occurred altered rock type gold deposit far from rock body tectonic zone.

Key words: porphyry copper-gold deposit, metallogenic model, Mongolia, Madey hematoxylite