1 Introduction

The Tianwangtai Mountain gold deposit is situated 35km southwest of Huma county, Heilongjiang province, containing more than 6.5t of gold. The geotectonic position of the gold deposit is in the north Mesozoic volcanic rock belt of the Da Hinggan Mountains, Northeast of Mongolia-Xing An giant composition orogenic zone. The Mesozoic volcanic rock including Ganhe formation (K1g) rhyolite, Jiufeng mountain formation (K1j) tuff-sandstone and Guanghua formation (K1gn) andesite tuff are the surrounding rocks in mining area. The faults in EW, NW, NE-trending and volcanic structure are the main structures controlling the ore deposit, while the faults in SN are the most important controlling structure of ore body. Medium-fine grained syengranite (K1ζγ) distributed in the west of mining area is the main intrusion, while there are some granite porphyry (γπ) and rhyolite porphyry (λπ) dikes emplaced in the faults.

2 Ore Characteristics

The ore body presented as en echelon veins in trend is mainly controlled by the faults in SN-trending, and the ore-bearing veins have the characteristic of expansion and contraction, and branch recombination and thinning out.

The ore types can be divided into quartz vein type and quartz stockwork volcanic type. The quartz vein type with book structure is mosaic by fines or lath-shaped quartz, while the quartz stockwork volcanic type presented as stringer or stockwork is composed by smoky gray quartz and pyrite, and a portion of limonite because of oxidation.

The ore mineral is native gold, while the gangue minerals are quartz, pyrite and few sphalerite, marcasite and limonite. It’s obvious that the mineral species are few.

The texture of ores are automorphic, subhedral-xenomorphic granular, sarciniform and replacement textures. And the structure of ores are disseminated, star-like and nervation structures (Fig.1).

Fig.1 ore characters of the Tianwangtai Mountain gold deposit
a. quartz vein type ore; b. quartz stockwork volcanic type ore; c. book structure of quartz; d. automorphic- granular pyrite; e. sarciniform texture of marcasite; f. replacement texture; g. inclusion gold in pyrite; h. inclusion gold in quartz; Q-quartz; Py-pyrite; Ma- marcasite; Sp-sphalerite; Au-gold
3 Conclusion

The Tianwangtai Mountain gold deposit located in north Mesozoic volcanic rock belt of the Da Hinggan Mountains. The surrounding rock in mining area are Mesozoic volcanic rocks, instead of metamorphic rocks, which are very common in orogenic gold deposits (Groves et al., 1998). And the ore types including quartz vein type and quartz stockwork volcanic type are different from carlin-type gold deposits (Berger et al., 1993). So the Tianwangtai Mountain gold deposit does not belong to orogenic gold deposits or carlin-type gold deposits.

The ore-controlling structures are closely related to volcanic structure, which indicates the genesis of the deposit is related to volcanism. And the ore mineral composition, such as the book structure of quartz, sarciniform texture of marcasite and so on, is analogous to Axi gold deposit in Xinjiang (Zhai et al., 2010), which is typical low-sulfidation type of epithermal gold deposit.

So the paper believes that the Tianwangtai Mountain gold deposit most probably belongs to epithermal gold deposit.

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References