Abstract: The Shanggong gold deposit is a large tectonic altered rock type (orogenic-type) gold deposit discovered in Henan provience, Central China. It has resources of about 30t Au, making it one of the largest Au deposit hosted in continental volcanic rocks in China. It’s located in the Xionger terrane, southern margin of the North China craton.

The main strata developed in the Shanggong area can be divided into three units. The underlying unit is the Taihua Supergroup (basement), which consists mainly of high-grade metamorphic rocks, with ages ranging from 2900 to 2200Ma (Xue et al., 1995), consisting amphibolite-gneiss, amphibole plagiogneiss. The Xiong’er group is predominantly a volcanic sequence that unconformably overlies the metamorphic basement, consisting basalt, andesite, andesite. Quaternary residual sediments and alluvium mainly developed along the gully, thickness of 0 to 15 meters.

The deposit contains 30 ore bodies which distribute as a horsetail-like. All ore bodies are located in altered tectonic belt and are controlled by the NE-trending belt, about 2200m long and 600m wide. The ore zones have no obvious boundary, depending on cut-off grades (Chen et al., 2006). Ore bodies are commonly lenticular, veins or tabular.

The ores occur as breccias, altered or cataclasite. The gangue and ore minerals are very complex. The ore minerals are predominantly native gold, electrum, pyrite, galena, calaverite, hessite, sphalerite, chalcopyrite, hematite; while the quartz, ankerite, sericite, chloride, epidote, fluorite, calcite and feldspar are the gangue minerals.

Wall rock alteration is complicated due to the influence of ore-bearing hydrothermal, which contains beresitization, silification, iron dolomitization, sericitization, chloritization, and hematitization, with lesser kaolinization, epidotization, fluoritization, calcitization and little baratization. The main alteration types:

Beresitization has closely related to gold mineralization in this ore district and distribute in the breccia and cataclastic rock. Pyrite, quartz and sericite are closely associated in the breccia, mortar and its fracture.

Chloritization mainly developed in middle and late stage of mineralization. Chlorite and sericite are uniform mixing, accompanied by uneven ankerite microcrystalline- and sporadic quartz in middle stage, which $w(Fe)/w(Fe+Mg)$ is 0.87–0.89. The late stage of chlorite assume granular or thin vein in carbonate, which $w(Fe)/w(Fe+Mg)$ is 0.76–0.85 (Hu et al., 2013).

Carbonation mainly contains iron dolomitization, calcitization. The ankerite developed in the hydrothermal mineralization period. Polymetallic-sulphide-iron dolomite is important to the deposit. Calcite developed in the late stage.

These alterations have a certain order in time domain, but in space showed some zonation and has a superimposition of features. In this study, on the basis of field findings, mineral and rock identification and the altered rock X-ray powder diffraction test (Table.1), discover a distinctive lateral zoning (Fig.1), which from the orebodies to the country rocks includes: a 1 to 3 m Au-bearing zone with sulfide-ankerite-sericite-quartz, which $w(Fe)/w(Fe+Mg)$ is 0.76–0.85. Some area has reached production-grade and developed different types of ores and the size of Au ore bodies; a pyrite-chloritization-ankerite-sericite zone, mainly distributed in the internal or external contact zone of fault developed intermittent, scattered, small; a 5 to 20 m wide zone of chloride-ankerite mainly distributed in the internal or external contact zone of fault developed intermittent, scattered, small; a 50 to 150 m wide slightly altered zone of ankerite- chlorite is the edge of the altered zone.

Wall Rock Alteration Zoning Characteristics of the Shanggong Gold Deposit, Eastern Qinling Orogen, China

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Microelements in the alteration zones which have an obvious change contain Pb, Zn, Cu, Ag, Ni, As, Bi, Au, W. The above elements have a similar vary trends to the intensity of alteration from orebodies to wall rock by changing less.

About the relationship between wall rock alteration and mineralization, different stages of mineralization have the corresponding development of wall rock alteration. Only the alteration in the main mineralization stage has instruction significance for prospecting.

**Key words:** orogenic-type Au deposit, alteration zoning, X-ray power diffraction, Shanggong gold deposit, Eastern Qinling.

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