No matter from the economic value or the production value, gold has been paid more and more attention from society, therefore gold ore development becomes the focus of social attention naturally. The gold ore is mainly derived from the strata surrounding rock; gold abundance values in all kinds of lithology in strata is 1 - 2 orders of magnitude higher than that of in crust in general; lithology of the average, magmatic activity is an indispensable condition for formation of the gold deposit.

Diorite as one kind of intrusive rock category as well as the surrounding rock that gold ore is distributed is visible on a variety of tectonic units, but it seldomly intrude in independent rock mass, and often accompanied with basic rock, acid rock or alkaline rock, becoming the edge of all the other kinds of rocks. Even if diorite formed in independent rock, it only formed small rock strain, cover or irregular intrusion.

This paper mainly talks about the characteristic of gold deposite associated with diorite. Combining with the previous experience gold deposite in diorite will be summarized systematically. Hoping these conclusions will be useful for learners.

1 The Geotectonic Background

Gold deposit related to the diorite mainly develop along the tectonic boundaries, which are found in continental margin or suture zone, the orogenic belt, that is much related to volcanic and magmatic arc, the area diorite developed is commonly strong orogenic metamorphism and deformation caused by thermal events outside of the focus area.

2 The Geological Conditions

The gold mineralization is controlled by the faults obviously, main fault zone control the distribution of magmatite, but also as a structure of ore forming, while secondary fracture mainly is the host structure. The scale and occurrence of orebodies controlled by dendritic diorite dikes scale, lithology combination and form and occurrence of contact zone.

In terms of the geological background of the surveyed orefield, surrounding rock of diorite can be shallow metamorphic, with its geotectonic background of suture or geosynclinal area, or it can also be deposited cover without modification, it often happened on the block edge. It generally proved that the deposit is not due to the metamorphic hydrothermal.

intrusions in gold deposits can be composed of rock neck, rock shoot, rock dike. Partial gold ore mainly distributes in large quartz veins, which usually locates on the rock edge. There are two main types of ores, one is rich sulfides, often involving pyrite, pyrrhotite, arsenopyrite, galena, sphalerite etc. Another is poor sulfide, mineralization mainly shows with the way of natural gold, few pyrite, galena, chalcopyrite etc are visible in ore veins.

3 Mineralization Alteration Features and Enrichment Regularity

The mineralization mainly develops along the rock mass contact zone, quartz net veins, quartz large veins and altered breccia transits mutually, propylitization (a wide range of corrosion related to intrusion) and sericitization and dolomitization (tectonic control develops along the contact zone) are the main alteration, additionally it also accompanies chloritization, epidotization, silicification, sericitization. The mineralization exhibits as a structure alteration zone with strong cleavage in macrography, accompanying strong pyritization generally. Fresh surrounding rocks are granodiorite, biotite granite, diorite...
porphyrite and a small number of low grade metamorphic rock, phyllite, slate, chlorite schist. Sericite + dolomite + pyrite alteration group has close relationship with mineralization, mineralization is increasing more quickly as the tectonic brecciation enhances..

In previous investigations of gold ore (e.g. Kampuchea, Inner Mongolia and Xinjiang), there exist a large quantities of fine-grained pyrite, and it enhance when near the ore vein, but the wall rock usually do not contains gold, it shows host structure and its nearby or corresponding diorite lithofacies may originally was a more Fe rich environment. Previous data showed that neutral intrusive rock itself in Au content has no particular ore-forming advantage, its close relationship with gold deposits should be mainly attributed to other geological conditions. Obviously, When diorite exists at the block edges and in magmatic arc of suture zone, the inner and outer contact zones is an important prospecting areas, when a large amount pyrite appears at the edges of suture zone it should be given enough attention.

From the perspective of prospecting, take the tectonic location, ore control rock and tectonic conditions and the features of alteration for marks to lock the ore prospecting target area. gold deposits related with diorite has high quality characteristics, many places of our country has the geological conditions for the formation of this kind of gold deposit, along the Eurasian continental margin in Eastern China there exists huge magmatic belt, lots of intrusive igneous rocks exist in Tianshan, Daxinganling etc of Paleozoic orogenic belt. Therefore it is important to find gold deposits related with diorite, which not only beneficial to the study on metallogenic mechanism, mineralization regularity, also can bring high economic benefit.

Acknowledgement

Thanks for guidance and help of my tutors and workmates.

Key words: Gold deposit; diorite; Magmatic activity; Distribution characteristics