1 Introduction

Dahutang tungsten is discovered in recent years, which is widely concerned because of various types of mineralization and unique metallogenic geological conditions, has been identified as large scale. It doesn't only change the "South-tungsten, North-copper" resource pattern, but also makes the research center transfer from south to north.

Recent years, about this area much research work have been done and a lot of achievements are applied to the prospecting practice, playing an important role for the further expansion of the amount of resources.

The breakthrough of Dahutang ore district overturned many traditional understanding of metallogenic theory in Jiuling area. The new discoveries of scheelite, cassiterite, stannite and sphalerite, especially the discovery of scheelite, changed the previous history of focusing on wolframite, with important reference significance for the future prospecting in the area of wolframite. On the deposit types, the altered granite type and hydrothermal cryptoexplosion breccia type tungsten polymetallic ore have been discovered, especially the veinlet disseminated and thick bedded scheelite ore body which occurs in the outer contact zone of Jinning biotite granodiorite, providing the new prospecting direction for Jiuling area.

The district is located in the southeastern margin of the Yangtze plate, belonging to II grade tectonic units of Jiuling-Zhanggongshan west uplift of Jiangnan massif. It is adjacent to the nappe structure of Leping and Jiuling.

2 Regional Strata

The exposed strata consist of Mesoproterozoic, Neoproterozoic, Paleozoic and Mesozoic, among which Mesoproterozoic strata developed most, as well as the other period of strata also outcrops sporadically.

The metamorphic rocks of Mesoproterozoic Jixian Period spread Jiuling uplift, including Hengyong group, Jinlin group, Anlelin group and Xiushui group.

Hengyong group consists of Palimpsest graywacke, slate intercalated with siltstone, characterized by containing carbonaceous slate, 1985 m thickness. Jinlin group, more than 1265 m, is mainly banded siltstone, occasionally interbedded blastopsammite, a little of metamorphised spilite and meta-spilite baschtaunite, with glutenite on the bottom. The lower members of Anlelin group is medium-thick bedded palimpsest feldspathic graywacke, palimpsest tuffaceous sandstone mixed with sericite phyllite, quartz sericite phyllite, which characterized by low density turbidity and containing more calcium mass and mixing with meta-spilite baschtaunite. The middle members are composed of thin-bedded silty sericite phyllite, quartz sericite phyllite mixed with palimpsest tuffaceous siltstone, calcareous sandstone lens and palimpsest fine grained limestone bands, which characterized by more tuffaceous and locally meta-quartz-keratophyrite containing pyrite, reflecting the deep-sea weak reductive turbidite sedimentary environment. The upper members with 2000 m thickness are the thin bedded metaclastics and slate, whose bottom it is the thick-bedded palimpsest coarse lithic graywacke mixing with more mudstone and boulder-clay, belonging to bathyal low density turbidite.

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Mesozoic strata consists of Jurassic volcano clastic rock, Cretaceous red mudstone, variegated coarse clastic rocks mixing with volcanic rock, mainly distributing in the Poyang lake depression and faulted basin.

3 Regional Structures

The structures are very developed, including three kinds of forms: the ductile shear zone, fracture and joint. Especially, the relationship between mineralization and ductile shear zone, which affects the physical and chemical properties and the structure characteristics of rocks, and supply heat source, reduce pressure and act as the channel and space of ore-forming material.

In this ore district, the faulted structures interwoven into a network, in which the larger scale fracture is mainly EW and NE-NEE direction. Xiushui-Wuling and Cihua-Yifeng NEE fracture zone is characterized by the large scale and cutting depth, including of north and south boundary fault in Jiuling uplift. And, a series of NE-NEE strike-slip fault zone also developed well, among which the larger scale faults consist of Qingan-Cunqian, Tonggu-Yujiaping, etc.

4 Magmatic Rocks

In the ore district, the frequent magmatic activity is characterized by multi-phase and multi-stage, and dominant by intermediate-acid volcanic rocks, with few basic-ultrabasic rocks.

It exists dozens of exposed Yanshan rocks. The rock of early Yanshan is mainly compound stock, consisting of biotite tonalite, granodiorite, two-mica granite, muscovitize albite granite and muscovitize sodium potassium granite. The late Yanshan rocks mainly includes of Yunshan two-mica granite composite stock, Dahutang biotite granite group, Banling and Ejing Albite granite wall, Cunqian and Yifeng granodiorite-porphyry.

Overall, in this ore district the mineralization is closely related to intermediate acid intrusive body of Yanshan period, and the tectonism is considered as an important condition which controlled metal mineral formation, especially large-scale nappe, NNE strike slip thrust and extensional structure that obviously controlled the formation and distribution of metal mineral.

5 Prospecting

Nowadays, it is very ambiguous about the relationship between Dahutang fault and tungsten deposit, which seriously affected the further research work such as zoning and stage of tectonic mineralization.

Ruan et al (2013) pointed out that more dating data of fault is necessary for more profoundly understanding the relationship between the structure and mineralization. Dahutang tungsten is an important part of Fe-Cu-Au-W polymetallic ore belt in the middle and lower reaches of Changjiang River in China. So, the comprehensive study of Dahutang tungsten deposit is meaningful to understanding the mechanism of other ore deposit in China.

Although the geological research on this area is still very weak, including the ore controlling mechanism of structure, the source, evolution and migration of ore-forming fluid, etc, a lot of geological prospecting information shows that the ore district still has great prospecting potential.

It is necessary to strengthen the research on metallogenic regularity, mineralization model, and try to find a number of large reserve bases, increase the resource supply. At the same time, the future monographic study should be focused on metallogenic conditions and regularity, mineralization and prospecting model, optimizing ore prospecting target areas and guiding geological exploration practice.

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