The Regional Ore-Forming Geological Background

The Tengchong Fe metallogenic belt is located in the south of the Sanjiang metallogenic belt in the south extension of Tibetan Plateau, the west of Nujiang fracture, in the range of Boshulaling—Gaoligongshan Mountain tectonic belt, Meso-Cenozoic metal metallogenic belt, which is in the southern Chayu—Tengchong Meso-Cenozoic magmatic belt, is rich in aluminum, copper, iron, lead, zinc, tungsten, tin, molybdenum and rare mineral resources, and is closely related with Meso-Cenozoic acidic intermediate-acidic magmas → basic, ultra basic magmas activity.

The research area is a part of southern Diantan-Puchuan north-south iron ore belt which developed in different genetic types in different times. It is closely related with different times and different magmas activity. With superior metallogenic geologic condition and great ore-prospecting potential, it is expected to become a high grade iron ore output region.

2 The Main Research Contents and Achievements

This article depends on the research of a magnetite ore deposit somewhere in Tengchong County by geology, geochemistry, geophysics and other related sciences. Researches show that in addition to Diantan iron mine (Zhao Guiqiu, 2012)、Cizhudi iron mine (Chen Haijun, 2010) which all are skarn iron ore in Tengchong, there are some other genetic types such as the deposit which considered that the mineralization results from the comprehensive effects of basic–ultra basic magmatic and arcuate tectonic activities, and the deep-seated magmatic segregation and injection are the internal factors of mineralization(Xue Yanping, 2012). Therefore, the author speculated that Tengchong magnetite mining area has great extension and hidden iron ore bodies may exist in its deep regions.

(1) No matter from the metallogenic specialization of granitic rocks and basic–ultra-basic rocks, or from the positive correlation between Fe element with iron group elements such as Mn,V, Ti and so on in the iron ores, or from the time-space relationship between the Fe3O4 deposit in research area and the basic–ultra-basic rocks in adjacent region, the mother rock or the source rock of the iron (Fe3O4) mine might be the basic–ultra basic rocks. The mineral deposit vests in the injection type with rich iron ore, which relatively formed in the process of the basic–ultra-basic magmatic later liquation. The formation of the Cu, Ni (PGE) liquation deposits in the deep magnesian ultra-basic rocks and the shallow iron ore body superimposed by post magmatic hydrothermal Cu polymetallic mining can be possible. It also can be expected for the ore-forming prospects and the prospecting potential.

(2) Controlled by the Lushui-Longling-Ruili arcuate tectonic belt, rocks which are from the Pliocene magnesia basalts to magnesia ultra-basic rocks show an evolution regularly and orderly, including the direction from north to north east to south west, the way of igneous activity (eruption to intrusion), the rock types(basic to ultra-basic) and the intensity of magmatic activities. However, this arcuate basic-ultra basic rock belt is just located in low-stressed zone of the arcuate tectonic belt, which provided an extraordinarily suitable tectonic setting and conditions of segregating and enriching for magma crystallization -
gravity segregation and liquation. All of them reveal that the time-space relationships of metallogenic between Fe₃O₄ and Cu, Ni (PGE) and the huge potential of deep metallogenic prospecting foreground.

(3) Whether basic–ultra basic rock mass could be mineralization, not only depending on the abundance of the ore component of the basic–ultra basic magma, but also being controlled by the completeness and thoroughness of the magmatic differentiation and liquation. Lushui-Longling-Ruili basic-ultra basic rock arcuate belt, from the formation of late magmatic liquation penetration type iron mine in the northeast to each small ultra basic rock mass in the southwest, generally show the wall rock alteration characteristics of strong serpentinization and chloritization, and indicate that the high degree of magmatic differentiation and liquation. Furthermore, the development of small rock mass reveals the thoroughness of basic–ultra basic magmatic differentiation to a certain extent, and that the small rock mineralize with high probability is geological truth in world wide. These characteristics above show the directed evolution law and great metallogenic prospects of Lushui-Longling-Ruili basic - ultrabasic rock belt iron mine(Fe₃O₄)→Cu, Ni (PGE).

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