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Discussion on the Necessity of Granite for Mineralization in the Dachang Giant Tin-polymetallic Deposit, Guangxi

XIAO Chunhui¹, LIU Hao², HOU Dianji², WANG Chan³, WANG Chun^{2,4}, FENG Hanbin², XU Wei^{2,5}

1 College of Sedimentary Geology, Chengdu University of Technology, Chengdu 610059, China;

2 College of Earth Science, Chengdu University of Technology, Chengdu 610059, China;

3 College of Earth Science, Guilin University of Technology, Guilin 541004, China;

4 Sichuan Provincial of Geology and mineral Bureau prospecting team, Chengdu 610059, China;

5 Sichuan Provincial of geological team, Chengdu, 610059, China

Dachang Tin-polymetallic ore field, in the middle of the Nandan-Hechi(Dan-Chi) tin-polymetallic metallogenic belt, is the famous super large ore deposit in the world, mainly in NNW-SSE distribution, the explored reserve of tin was 680,000 tons in 1965, reaching the scale of super-large mineral deposit, along with concomitant of Sn, Pb, Sb reserves of more than 4000 thousand tons. So it is necessary to study the genesis of the Dachang tins-polymetallic deposit on the whole. In addition, the granite occupied the irreplaceable position in the mineralization, and this paper made a brief overview of this feature.

In the whole ore field, we can find that the rich ore horizon of tin deposit is mostly in Tang-Ding group, Lower Devonian series, to Huanglong Formation, Middle Carboniferous, and through each layer of a detailed comparison, it can be concluded that Sn is an ore body formed by remelting granite after gathering and carrying. On a large area, the multi-period of granite intrusion provides more favorable conditions for the late period of granite remelting and enrichment of useful ingredients, and it also makes the late Yanshanian granite in Dachang area become a decisive contribution to metallogenic. At the same time, it also plays an driving effect on the outer material of intrusion, and makes it merge with magma ore-forming materials. As a result, now the composition of the Dachang ore fields is various, complex, and extremely high in comprehensive utilization value, and the key factor is the late Yanshanian granite intrusion. On the whole, there are the following evidences:

(1) The Ore age determination, according to the study of Chen et al. (1990), they conducted the K-Ar whole rock age determination to the No. 91 orebody, which have the

"thin layer cassiterite potassium feldspar sulfide sandwich", and the result is 117. 87_Ma, and the K-Ar age determination of illite, in the geode, is 90. 92_Ma. According to the "climbing program "(1996) project research of super_large deposit in mineral gas-liquid inclusions Rb-Sr isochron method measured, the age determination of mineral gas-liquid inclusions which including 91, 21, 100 and fissure vein mineral gas-liquid inclusions of age was 101. 0±2. 9Ma.

(2) In the large area, the distribution of south China granites and Sn regional high background area nearly coincidence, and in the whole south China continental crust, extensive granite activities of varying ages, where exactly overlapped with the high background area of W and Sn geochemical anomaly region of Guangxi have consistency with the spatial distribution of granite mass of rock, although some rock mass is no deposit, the importance of granite in the accumulation of Sn is obvious. On the contrary, the anomaly area of Sn does not vary with siliceous rocks - submarine hot water deposition.

(3) Zonal distribution of the deposit for the rock-centric is relatively obvious, the mineral composition and their variations of characteristics, element combination and the salinity of mineral gas-liquid inclusions, F/Cl value, Mn²⁺ ion concentration in the ore and ore-forming temperature all appeared the Zoning regularity changes, which centers on the biotite granite of Longxianggai. In the 70s, 215 geological exploration team succeeded in establishing multiple stepwise regression equation, which based on the zoning of element combination, and then found the No. 100 orebody and Dafulou No. 21, 22 orebody in Bali-Longtoushan neighborhood, which were all huge, rich and

* Corresponding author. E-mail: 1207185221@qq.com

concealed in the deep, they were blind orebodies. The use of this method is not only reflected on the metallogenic regularity of mathematics generalization, finally also obtained great success on metallogenic prediction.

Because phacolith and strain bursts often appeared in the location of fracture, so the ore-forming position of each orebody in Dachang ore field is related to the phacolith and strain bursts of granite, and the magma and ore-forming hydrothermal also activity around here, and this phenomenon right proved the relationship between mineralization and magmatic activity. Finally the author believed that the formation of superlarge deposit may be traced back to the Mesoproterozoic Sibao strata compaction fold, The rock formation water, groundwater migration began to drive part rock of ore-forming elements in rose, to Xuefeng period of strong

metamorphism ore-bearing metamorphic water, as well as the future of Xuefeng and remelting granite magma material mixing and geothermal driving outside of intrusive rocks, Later by the Caledonian, Inzhi-Yanshan period in a similar role inheritance superimposed on the Yanshan terminal end of magmatic hydrothermal to ore, So this kind of so-called magmatic hydrothermal source is a kind of more long-term activity superposition compound hydrothermal mineralization. Acidic magmatic activity is the key to the qualitative change phase of mineralization, but the source of the material is a product of the multi-source long-term superposition reconstruction, that is to say the magmatic intrusion of late Yanshan led to the mineralized material precipitated, also is the main reason of the formation of Dachang ore fields today.