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Ore-controlling Regularities of Structure in the Lehong Lead-zinc Deposit, Northeastern Yunnan

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1 Introduction

The Lehong lead-zinc deposit is a large-sized Pb-Zn deposit newly found in recent years in the Sichuan-Yunnan-Guizhou Lead-zinc Poly-metallic Mineralization Area, which occurrence is strictly controlled by structure. Many researchers had studied on chronology and geologic features of the Lehong deposit (Zhang et al. 2014; Zhou, 2003), but ore-controlling regularities of Structure in this deposit has not reported.

2 Ore-controlling regularities of Fold Structure

The Lehong deposit is located in the northern plunging crown of the Weigu anticline (Zhou, 2003). Multiple episodes of structures activity provided metallogenic conditions for the formation of the deposit. Jinjiagou anticline and Baobaoshan syncline are major fold structures. They had developed in the dolomite of the Sinian Dengying formation. Ore-bodies are hosted at the interlayer fault zones in the eastern wing of fold structures. On the basis of research on relationship between folds and faults, it is considered that the two folds were resulted from fault activity. When the fold structures had been taken shape, the wing strata of fold structures formed interlayer faults. The ore-forming fluid 'injected' along the interlayer faults to enrich to form a series of beaded ore-bodies by tectonic driving.

3 Ore-controlling regularities of Fault Structure

Major ore-controlling faults in the deposit are F₁ fault

and F₂ fault, which are important parts of the Lehong fault and also are ore-transmitting structures of the deposit. Ore-controlling regularities are as follows: Firstly, the deposit distributed along the Lehong fault zones, ore-bodies were located in the lower plate of F₁ fault and F₂ faults, ore-bodies arranging in right-hand style occurred within NNW-trending fault zones, and inclined in SW-trending in the profile. Secondly, strong dolomitization, pyritization and silicification, etc. alterations occur in the edges of fault zones. A lot of carbonate veins developed in the fractures of wall-rock. Thirdly, there are strong anomalies of Pb, Zn, Ge, Tl and Cu, etc. elements along NW-trending faults, the second faults and cracks, and the anomalies of these elements in the depth are higher than that in shallow. Though dolomite in wall-rocks can not provide enough fluid to enrich REE (Michard A., 1989) and the mantle fluid contains abundant REE, especially LREE (Li, 2003), the high REE content in the altered tectonites and higher anomalies of Σ REE, Σ LREE and Σ HREE in the depth than that in the shallow means some ore-forming fluid originated from the depth. These characteristics show that the Lehong fault between the Lemachang fault and the Qiaojia - Lianfeng fault is migration pathway of ore-forming fluid and ore-forming fluid migrated upward to form the deposit along NNW-trending ore-bearing fault.

4 Conclusions

It is shown that the NE-trending structural zone is major ore-forming structural system of the Lehong lead-zinc deposit, and the deposit was strictly controlled by fold structures and fault structures. The fault tectonites may provide important information about the location and prognosis of concealed ore-bodies in the

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depth.

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