WAN Xin, HAN Runsheng and LI Bo, 2017. Element-Combinations from Evidences of Tectono-geochemistry of The Lekai Pb-Zn Deposit in Northwestern Guizhou, China . *Acta Geologica Sinica* (English Edition), 91(supp. 1): 231-232.

Element-Combinations from Evidences of Tectono-geochemistry of The Lekai Pb-Zn Deposit in Northwestern Guizhou, China

WAN Xin[1], HAN Runsheng[1,*] and LI Bo[1]

Faculty of Land Resource Engineering, Kunming University of Science and Technology, Kunming 650093; South-West Institute of Geological Survey, Geological Survey Center for Nonferrous Metals Resources, Kunming, 650093

1 Introduction

The Pb-Zn metallogenic area in Northwest Guizhou is located in the southwest margin of the Yangtze block, which is an important part of the Sichuan-Yunnan -Guizhou (SYG) Pb-Zn metallogenic province. So far, studies (e.g. Qian, 2001; Jin, 2008; Zhou et al., 2013a) on this area have achieved numerous research achievements. Lekai Pb-Zn deposit is one of the newly discovered small deposits in this year. It is located at the Yinchang -po-Yunluhe ore-controlling fault zone in the northeastern segment of the NE-trending Luozehe fault. Wang (2004, 2008) made a preliminary study of this deposit, and thought it had a great prospecting potential. The research by Jin et al. (2016) and Zhang et al. (2016) showed that the ore-forming material is not from the ore-hosted strata. However, there are still some problems to be solved, such as the ore controlling regularity and tectono-geochemistry. Therefore, authors have studied tectono-geochemical features to find new ore bodies in this paper.

2Geological features

In the Lekai ore district, the main stratigraphic sequence is comprised of Middle-Upper Devonian, Lower and Upper Carboniferous and Middle-Lower Permian rocks. And the Upper Devonion Wangchengpo Formation (D_3w), which is the most important ore-hosted rocks, composed of dolostone and limestone interbedded with dolostone. Intensively, NE-trending ore-controlling faults (F_1, F_2 and F_3) and anticlines, such as the Dachangpo anticline, the Tujizhai anticline and the Liangtianwo anticline, are developed in the ore district. The main faults are the NE-NNE-trending, NW-trending and interlaminar fracture zones. The orebodies mostly hosted in the NE-NEE-trending interlaminar fracture zones, they are disseminated and veinlike, and are composed of sphalerite, galena and pyrite, with calcite and dolomite as gangue minerals. The wall rock alteration includes dolomitization, calcilization, pyritization and Fe-Mn carbonation.

3 Studying Method

According to tectono-geochemical procedure (HAN et al., 2013, 2006), 645 representative tectono-geochemical samples were collected in the district. Each sample weights 1-2kg, and all the samples were pulverized to 200 mesh in no pollution condition. The main elements and trace elements content of them were obtained by ICP-MS at the Nonferrous Metal Northwest Geological Test Center in China, and 5% code samples were added to verify accuracy of the data. Statistics software was used to conduct R-type cluster and R-type factor analyses.

4. Conclusions

Eight groups of elemental associations had been obtained respectively by R-type factor analysis when cumulative contribution of variance accounted to 76.41%. (1) Th, Cs, Rb, Nb, Hf, Sc, REE, Ga, TiO_2, Zr, Ba, Ta, Li, Be, Co, Ge, Bi, (Cr, K_2O, Al_2O_3, SiO_2); (2) Zn, Cd, Pb, Mo, Tl, Ge, (TFe); (3) In, Ni, Sn, V, Cu, (Cr); (4) Al_2O_3, SiO_2, K_2O, TFe, Na_2O, -MgO, (TiO_2); (5) -CaO, -Sr (6) MgO, MnO. (7) Li, Be; (8) Sb, As, Hg, (Tl). Group 1 shows trace element combination of strata, group 2 is regarded as lead-zinc metallogenic element combination, group 3 shows element combination of high-temperature fluid, group 4 is main element combination of strata, group 5 is calcite element combination, group 6 is dolomitization element combination, group 8 is element

* Corresponding author. E-mail: 554670042@qq.com

combination of low temperature. In them, Zn-Cd-Pb-Mo -Tl-Ge-(TFe) element combination is important, and its anomalies may be used for forecasting concealed ore-bodies in depth.

Acknowledgements

This research was jointly supported by the Funds for the program of the National Natural Science Foundation(Noes.41572060,41402072), University enterprise cooperation projects (No.20160039), Projects of YM Lab (2011) and Innovation Team of Yunnan province and KMUST (2008, 2012).

Reference

Han Runsheng, 2013. *Main study progress for ten years of tectono-geochemistry*. Bulletion of Mineralogy, Petrology and Geochemistry, 32(2):198-203(in Chinese).

Qian Jianping, 2001. *Tectono-dynamic mineralization in wei-ning-shuicheng Pb-Zn ore belt, northwestern Guizhou*. Ge ology-geochemistry, 29(3):134-139(in Chinese).

Jin Xianglin, Meng Changzhong, Leng Chengbiao, Qi Youqiang, Tang Yongyong, Zhang Hai and Chen Xing, 2016. *Element Geochemical Characteristics and C-O Isotopic Compositions of Pb-Zn Deposit in Yunluheba Area of Guizhou and Their Geological Implication*s, Journal of Earth Sciences and Environment, 38(6):778-790(in Chinese).

Zhang Hai, Meng Changzhong, Qi Youqiang, Tang Yongyong, Jin XiangLin, Chen Xing and Leng Chengbiao, 2016. *Sources of the Ore-forming Material from Yunluheba Ore Field in Northwest Guizhou Province, China: Constraints from S and Pb Isotope Geochemistry*. Acta Mineralogica Sinica, 36(2):271-276(in Chinese).