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An Analysis of the Enrichment Characteristics of Dispersed Elements Cd and In of the Lawu Deposit in Xizang(Tibet)

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The dispersed elements Cd and In are scattered in nature. Because they are scarce and due to their chemical behaviour they rarely develop an independent mineral; they are usually associated with deposits dominated by other elements. For example, the Pb-Zn deposit type is an important type of dispersed elements enrichment. There are thousands of Pb-Zn deposits in Tibet, which are studied by geologists for minerals, genesis and ore deposit types. But little attention had been paid to the dispersed elements, which are widely associated in the Pb-Zn deposits. The Lawu deposit is one of the representatives of Pb-Zn deposits in Xizang(Tibet), it is regarded as the main object of study to reveal the accumulation characteristics of Cd and In in the Pb-Zn deposit, aiming to provide reliable data for the study on dispersed elements in Pb-Zn deposits.

The Lawu Pb-Zn deposit is a skarn deposit, which is located in Xainza-Poindo Cu-Ag-Pb-Zn-Au mineralization subzone in Gangdese magmatic-tectonic metallogenic belt. The deposit was discovered by Henan Institute of Geological Survey in 1996, when conducting a number of geological surveys and research. Now it is one of the few nonferrous metal deposits being mined in northern Tibet and the exploitation of mines is in responsibility of the Huayu Ming.

The Lawu deposit is hosted by a variety of metamorphic rocks, which are garnet skarn, tremolite skarn, skarn marble and sandy slate. According to the results of geochemistry the host rock has a large amount of In, which is 302 ppm. Cd concentrations average at 0.17 ppm in whole-rock samples. This indicates In enrichment relative to Cd and suggests that the host rocks can be the supplier of In.

Geochemistry of ores and minerals is an effective indicator of the dispersed elements enrichment. The results

of ores and minerals from selected samples of the Lawu deposit show the average concentration of Cd in sphalerite is greater than 6330 ppm, significantly higher than its content in chalcopyrite (averaging 84.3 ppm) and ores (averaging 1300 ppm). Concentration of In is also high in sphalerite, which is 875 ppm.

According to geochemical analysis, the Cd and In content in sphalerite is high. They are well above the minimum industrial grade of Cd (100 ppm) and In (10 ppm) for Pb-Zn deposits. On the basis of the study, it is believed that great economic and social benefits would be achieved by beneficiation tests of Cd and In, and practical applied research to make full use of the advantage of mineral resources and to develop new products.

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