# Enrichment features and significances of Ag and dispersed elements in the ores in the Huize Carbonate-hosted Zn-Pb-(Ag-Ge) District, Yunnan, China*

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The Huize district is a typical representative in the Sichuan-Yunnan-Guizhou metallogenic region, and contains 3 deposits which are overlain by Upper Sinian and Palaeozoic rocks. The ore minerals are dominated by galena, sphalerite, and pyrite, with minor chalcopyrite and hopeite. Gangue minerals mainly are calcite and dolomite, with minor barite, gypsum, and quartz. Concentrations of these elements typically are Ag (up to 200 ppm); Ge (up to 81.34 ppm); Cd (up to 488.0 ppm); In (up to 2.55 ppm); Ga (up to 1.93 ppm); and Tl (up to 11.85 ppm). Silver and dispersed elements in the major ore minerals are unevenly distributed. The contents of Ag are the highest (76 to 144 ppm) in galena and are associated with Tl and Cd, as well as a minor Ge. Sphalerite mainly contains Cd, Ge, and Ag and trace amounts of In, Ga, and Tl. The different varieties of sphalerite contain different concentrations of Ge and Ag. The early-phase sphalerite has the highest concentrations of Ge and Cd (Ge: 115 to 178 ppm; Cd: 770 to 1048 ppm), and higher concentrations of Ag (18 to 67 ppm). Concentrations of Ge and Ag in the late-phase sphalerite range from 1 to 88 ppm and 6 to 35 ppm, respectively. Pyrite contains mainly Tl and Ag. The first early-stage pyrite contains low concentrations of Tl and Ag (Tl: less than 1.61 ppm; Ag: less than 6.4 ppm); the second- and third-stage pyrites contain high concentrations of Tl and Ag (up to 3234 ppm Tl and 17.14 ppm Ag). In summary, galena is the major carrier of Ag, and a partial carrier of Tl and Cd; sphalerite is the major carrier of Ge and Cd and a partial carrier of Ag, In, and Ge. The second- and third-stage pyrites are the major carriers of Tl and a partial carrier of Ag.

According to Titley (1996) [1] and the unique geological characteristics of Huize deposits, the deposits can be classified as deformed carbonate-hosted MVT-type deposits.

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**References**

[1]Titley, S.R., 1996. SEG Special Publication 4, 244～254.