

Laser-Ablation ICP-MS Micro-analysis of REE in Hydrothermal Calcites from Jiepaiyu Realgar Deposit in Western Hunan, China

¹DENG, HAILIN, ¹LIU, CONGQIANG, ¹LI, CHAOYANG and ¹HU, RUIZHONG. ¹Open Laboratory of Ore Deposit Geochemistry, Institute of Geochemistry, Chinese Academy of Sciences, Guiyang, China.

The Jiepaiyu realgar deposit, the largest one in China, occurred in a pipe in Cambrian carbonate, is a typical low-temperature ore deposit, in which wall-rock alteration is mainly silicification and calcitization. Ore minerals are realgar, orpiment and trace stibnite and pyrite; gangue minerals are calcite, dolomite, jasperoid and minor quartz. Calcites are usually associated with realgar and orpiment, in which fluid inclusion homogenization temperature is from 70 to 200°C.

REE in hydrothermal calcites of different level and different mineralization stage in the Jiepaiyu realgar deposit are analyzed by laser-ablation ICP-MS which permits analysis on the scale of 30μm and determination of zoning profile and difference between grains. The results indicates a large variation in REE pattern from –266M level to +35M level (at –266M level, LREE enrichment; at –149M level, MREE enrichment; at –110M level, flat REE pattern; at +35M level, LREE and MREE enrichment), and an obvious intra- and intergrain change in ΣREE (from 100 to 0.1 times chondrite) and degree of fractionation, and decrease in degree of fractionation from early to later. The data are explained by a changing fluid/rock ratio during fluid-rock interaction and closed-system fractionation of the REE. The high contents in REE of several calcites are attributed to inheritance from wall-rock that reacted with

hydrothermal fluids.