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庐枞盆地高硫化型浅成低温热液成矿系统:来自矾山明矾石矿床地质特征和硫同位素地球化学的证据

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摘要:

庐枞中生代火山盆地位于长江中下游断陷带内,地处扬子板块的北缘。庐枞盆地内火山岩和侵入岩分布广泛,包括龙门院、砖桥、双庙和浮山四组火山岩以及34个侵入岩体。盆地内产出一系列铁、铜、铅、锌、铀等金属矿床,同时还大量产出以明矾石和硬石膏为代表的非金属矿床。庐枞盆地北部砖桥组火山岩内中酸性硫酸盐蚀变广泛发育,指示盆地内存在高硫化型浅成低温热液系统。本文以盆地北部矾山明矾石矿床为研究对象,查明了矾山明矾石矿体主要赋存在火山碎屑岩内,矿体呈似层状,产状基本上与围岩一致,矿石类型以黄铁矿-石英-明矾石矿石为主,明矾石主要为钾明矾石,主要蚀变类型包括明矾石化、硅化、高岭土化和绢云母化。明矾石的 $\delta^{34}\text{S}$ 值范围为20.29‰~23.18‰,平均值为21.86‰,黄铁矿 $\delta^{34}\text{S}$ 值范围为-7.06‰~-8.36‰,平均值为-7.49‰,明矾石和黄铁矿 $\delta^{34}\text{S}$ 平均值计算 $\Delta^{34}\text{S}_{\text{Alun-py}}$ 为29.35‰,指示矾山明矾石为岩浆热液与火山岩地层水岩作用的产物,硫同位素温度计计算得出明矾石形成温度为264℃。通过相关对比研究,本文认为庐枞盆地内存在高硫化型低温热液系统,系统中广泛发育的酸性蚀变很可能是玢岩铁矿成矿系统的组成部分,是玢岩铁矿系统成矿气液不断作用并演化到了最晚阶段的产物。

英文摘要:

The Luzong Mesozoic volcanic basin is located in the Lower Yangtze River fault-depression zone, where is the northern margin of the Yangtze Block. The volcanic and intrusive plutons occur widely in Lu-Zong Basin, including four formations of volcanic rocks such as, Longmenyuan Formation, Zhuanqiao Formation, Shuangmiao Formation and Fushan Formation and 34 intrusive plutons. A lot of metallic and nonmetallic deposits such as iron, copper, gold, lead, zinc, uranium, alunite and anhydrite deposits occur in the basin. The acid alteration widely developed in the north part of the basin, indicating the existence of high sulfidation epithermal hydrothermal system. We carried out detailed study on the biggest Fanshan alunite deposit in Lu-Zong Basin in order to identify the characteristics of this high sulfidation epithermal hydrothermal system. Alunite orebody mainly distributes in the volcanic pyroclastic rocks. The orebody is lensoid or layer and consistent with volcanic rock. The type of ore are mostly pyrite-quartz-alunite, and the mainly K-alunite are dominate. The alteration minerals include quartz, kaoline and sericite. The $\delta^{34}\text{S}$ values of alunite is 20.29‰~23.18‰, with average values of 21.86‰, The $\delta^{34}\text{S}$ values of pyrite is -7.06‰~-8.36‰, with average values of -7.49‰. The $\Delta^{34}\text{S}_{\text{alunite-py}}$ value is 29.35‰, indicating the alunite is formed by magmatic fluid and volcanic rocks. The formed temperature of alunite calculated by $\Delta^{34}\text{S}_{\text{alunite-py}}$ value is 264℃. According to the geological characteristics and sulfur isotope, we deduced the existence of high sulfidation epithermal hydrothermal system in the Lu-Zong Basin. The widely dispersed acid alteration may be formed in the later stage of porphyry-like iron deposit.

关键词: [明矾石](#) [高硫化型浅成低温热液系统](#) [硫同位素](#) [玢岩铁矿](#) [庐枞盆地](#)

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