

赵凯, 杨立强, 李坡, 熊伊曲. 2013. 滇西老王寨金矿床黄铁矿形貌特征与化学组成. 岩石学报, 29(11): 3937-3948

滇西老王寨金矿床黄铁矿形貌特征与化学组成

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基金项目: 本文受国家重点基础研究发展规划(2009CB421008); 北京市优秀博士学位论文指导老师科研项目(20111141501); 教育部新世纪优秀人才支持计划(NCET-09-0710)和高等学校学科创新引智计划(B07011)联合资助。

摘要:

老王寨金矿床是三江特提斯成矿域中已探明规模最大的造山型金矿床, 黄铁矿是其最主要的载金矿物, 依据矿(化)脉切割关系、矿石结构构造及矿物共生组合, 该矿床成岩-成矿期共发育5个世代黄铁矿。沉积-成岩期草莓状黄铁矿含Pb、Zn、Mn、Co、Ni和Bi。热液金成矿期可划分为: I 石英-绢云母-黄铁矿、II 石英-多金属硫化物、III 方解石-石英-毒砂-黄铁矿和IV 方解石-石英-辉锑矿-黄铁矿四个阶段, 其黄铁矿分别以粗粒他形、立方体、五角十二面体和立方体为主, 总体继承了沉积-成岩期黄铁矿含Pb、Zn、Mn、Co、Ni和Bi的特征, Au、As、Sb和Cu也有不同程度富集, 显示成矿流体成分复杂。III阶段为金的主成矿阶段, 以发育五角十二面体黄铁矿为特征, 富集Au、As、Sb、Pb、Zn、Cu、Co、Ni和Bi, 其中Au与As构成 $[Au, As]^{2-}$ 和 $[Au(As, S_3)]^{2-}$ 等络合物以类质同象的形式替代 $[S_2]^{2-}$ 而进入到黄铁矿中, 两者呈正相关, 成矿系统处于中-低温、流体过饱和度(硫逸度)高, 且缓慢冷却, 矿质来源充足的环境。

英文摘要:

Laowangzhai gold deposit is one of the largest gold deposits in the Sanjiang Tethys metallogenic domain, where pyrite acts as dominant gold-bearing mineral. Five generations of pyrite have been identified in diagenetic-metallogenic process, based on the crosscutting relationships of different auriferous veins, ore textures, and mineral paragenesis. The sedimentary-diagenetic period is mainly characterized by framboidal pyrite which is enriched in Pb, Zn, Mn, Co, Ni and Bi. Hydrothermal gold mineralization period could be further subdivided into four stages: Stage I quartz-sericite-pyrite stage, Stage II quartz-polymetallic sulfides stage, Stage III calcite-quartz-arsenopyrite-pyrite stage, and Stage IV calcite-quartz-stibnite-pyrite stage. During the hydrothermal mineralization period, the crystal form of pyrite evolves as coarse xenomorphic grain, through cube and pyritohedron, to cube. These pyrites are also enriched in Pb, Zn, Mn, Co, Ni and Bi, with different enrichment in Au, As, Sb and Cu, which shows the complex of the ore-forming fluid. Stage III is the main mineralization stage which is characterized by pyritohedron pyrite, and the pyrite is enriched in Au, As, Sb, Pb, Zn, Cu, Co, Ni and Bi. The hydrothermal period is characterized by the Au positively correlating with As, which suggests the Au and As formed the $[Au, As]^{2-}$ and $[Au(As, S_3)]^{2-}$. These two complex compounds replaced $[S_2]^{2-}$ and then formed pyrite. The ore-forming fluid is characterized by middle-to-low temperature, with high sulfur fugacity, slow cooling rate, and sufficient mineral source.

关键词: [老王寨金矿床](#) [黄铁矿](#) [微量元素](#) [成矿流体来源](#)

投稿时间: 2012-10-09 最后修改时间: 2013-01-17

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