

魏斐,刘玉琳,郭国林,张锐,张云孝,汪疆. 2009. 包古图斑岩铜矿床的钛矿物特征及其成因意义. 岩石学报, 25(3): 645-649

包古图斑岩铜矿床的钛矿物特征及其成因意义

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基金项目: 国家重点基础发展规划项目课题(2007CB411305)和核资源与环境教育部重点实验室开放基金项目(081201)

摘要:

在大量薄片鉴定的基础上, 本文对包古图斑岩铜矿的钛矿物组合特征及其形成机制进行了研究。主要钛矿物为榍石、钛铁矿和金红石。其中榍石在成岩期和成矿期均有形成, 但主要见于成矿期的钾化阶段, 与钾长石、黑云母共生; 在后期的青盘岩化和沸石化阶段也有出现, 但含量相对较少。成岩期的钛铁矿很少见, 成矿期各蚀变阶段均有分布, 但最常见于钾化阶段。金红石仅见于成矿期, 钾化阶段早期可与钾长石、黑云母、石英等共生, 还见有被榍石包裹的细粒金红石, 青盘岩化阶段亦有形成, 与绿泥石共生。这些钛矿物最常出现于黑云母颗粒内部或其附近, 这可能是斑岩型矿床的特征之一。榍石 $\text{SiO}_2$ 和 $\text{CaO}$ 含量与理论值接近,  $\text{TiO}_2$ 偏低; 钛铁矿均含锰,  $\text{MnO}$ 含量1.97%~4.49%, 还见有锰钛铁矿; 金红石含有一定量的 $\text{SiO}_2$ 和 $\text{FeO}^T$ , 个别颗粒还含有少量 $\text{Al}_2\text{O}_3$ 、 $\text{MgO}$ 和 $\text{P}_2\text{O}_5$ 。钛矿物组合特征表明包古图含矿斑岩为I型, 形成于较高氧逸度环境, 侵位深度不大。

英文摘要:

On the basis of observing a large number of thin sections, assemblage characteristics and formation mechanism of titanium minerals in Baogutu porphyry deposit were studied. The main titanium minerals are sphene, ilmenite and rutile. Sphene formed during both rock-forming and ore-forming period, but mainly found in the potassium alteration stage of early ore-forming period and coexist with K-feldspar and biotite, while relative low content of sphene also formed in the propylitization and zeolitization stages. Ilmenites developed in every alteration stages of ore-forming period in which most common in the potassium alteration stage, while rare formed in rock-forming period. Rutile is only found in the ore-forming period, in which it coexists with K-feldspar, biotite, and quartz in the early potassium alteration stage and also wrapped in sphene as fine grains. Rutile formed in propylitization stage too and intergrowth with chlorite. These titanium minerals are mostly found within biotite grain or nearby, which may be one characteristics of porphyry deposit.  $\text{SiO}_2$  and  $\text{CaO}$  content of sphene is close to the theoretical value, while  $\text{TiO}_2$  content is lower. All the ilmenites contain Mn, with a MnO content of 1.97 to 4.49 percent and manganese ilmenite is appeared (MnO content 18.38 percent). Rutile contains a certain amount of  $\text{SiO}_2$  and  $\text{FeO}$ , with a small amount of  $\text{Al}_2\text{O}_3$ ,  $\text{MgO}$  and  $\text{P}_2\text{O}_5$  in some grains. Assemblage characteristics of titanium minerals shows that ore-bearing porphyry of Baogutu porphyry deposit belongs to I-type, forming at a high oxygen fugacity and not deep depth.

关键词: [包古图](#) [斑岩铜矿](#) [钛矿物](#) [特征及成因意义](#)

投稿时间: 2008-12-10 最后修改时间: 2009-03-03

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