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湘南矿集区长英质岩脉的特征及其成矿、找矿意义

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摘要:

南岭地区不仅广泛出露花岗岩,而且还广泛分布着长英质岩脉。本文选择湘南矿集区的奇古岭、香花岭、荷花坪、千里山、新田岭和瑶岗仙6个不同类型、不同演化程度的长英质(流纹质、微粒花岗岩质、细晶岩质)岩脉为研究对象,利用全岩分析、电子探针矿物化学成分分析等结果,对比总结了这些长英质岩脉的岩石学、矿物学、年代学和地球化学等方面的特征。奇古岭和香花岭是其中演化程度最高的2个岩脉,富含Li和F等挥发组分,含有黄玉和铁锂云母等特征矿物,全岩和锆石的Zr/Hf比值均较低,同时它们还富集成矿元素,并以不同产状氧化物(锡石、金红石和铌钽矿物)形式存在。其它4个岩体成矿信息不明显,仅见由于后期绿泥石化形成于绿泥石解理缝中的次生矿物金红石(富集Nb和W)。除了千里山以外,岩脉与寄主或相邻的花岗岩体大多属于同一时期的产物,但从年代学并不一定能够体现出它们与各自岩体之间的相关性。这些岩脉都是花岗岩的次火山相或火山相的类似物,包括了斑晶矿物和基质矿物,快速的冷凝结晶的过程导致形成了特殊的岩石结构、矿物组合和成分特征,它们记录了岩浆-流体体系的活动过程。这些信息之间的相互印证,证实了奇古岭岩脉与骑田岭花岗岩来源于不同的源区,香花岭431岩脉可能是癞子岭花岗岩进一步高度分异结晶的产物,千里山岩脉与主体花岗岩也是不同成因的岩浆活动,荷花坪、新田岭和瑶岗仙岩脉与主体花岗岩未能判断明确的成因联系和成矿信息。因此,长英质岩脉,尤其是高演化的岩脉也能成为在南岭地区寻找成矿花岗岩的新窗口,它能够提供更直接的深部信息,特别是本身即为矿体的岩脉,可以指示深部或周围存在成矿作用。它们有可能与寄主岩体相关,也有可能来源于深部不同的岩浆房,这对与提供寻找隐伏岩体和矿体的证据、找矿勘探工作均有很重要的意义。

英文摘要:

Felsic dyke is very common in the Nanling Range, as well as large scale of granitic plutons. In this study, six dykes in Qiguling, Xianghualing, Hehuaping, Qianlisha, Xintianling and Yaogangxian are selected as samples, which belong to different types (such as rhyolitic, fine-grained granitic and aplitic) with various fractionated degree. Base on the whole rock analyses and chemical results of minerals, the features of petrology, mineralogy, chronology and geochemistry of these dykes are summarized and contrasted. Qiguling and Xianghualing dykes are two most highly fractionated rocks among six samples with very low Zr/Hf ratio in the whole rock and the zircons. They are enriched in volatile components (such as Li and F) and contain topaz and zinnwaldite. Nb, Ta, W and Sn are high in these two rocks, in the distinctive occurrence of oxide minerals, such as cassiterite, rutile and columbite. The other four dykes are barren. Only some secondary rutile with Nb and W enrichment occur in the cleavage of the chlorite, which developed by the alteration of the biotite. The dykes and their hosted or adjacent granites formed contemporaneously other than Qianlishan, however there is no confirmable relationship between them. They are sub-volcanic or volcanic analogue of granite, including the phenocryst and groundmass. Unique petrography, mineralogical assemblages and chemical results of minerals result from quenched and crystallized process, which recorded the complete magmatic-hydrothermal process. Combined these geological information, we indicate that the Xianghualing dyke is formed as a result of further fractionation of the Laiziling granite. While the origins between the Qiguling dyke and the hosted granite are distinct and the Qianlishan dyke and the hosted granite are also derived by the different source. No obvious petrogenetic and mineralized relationships have been found between the dykes and their hosted granite in Hehuaping, Xintianling and Yaogangxian. Therefore, no matter there is close relationship between the host granite and the dyke, the large-scale felsic dykes, especially high-evolved ones related to different kinds of mineralizations, are important indicators for the concealed

d host pluton and potential mineralization.

关键词: [长英质岩脉](#) [高演化](#) [稀有金属花岗岩](#) [成矿作用](#) [南岭](#)

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