

## 苏-查萤石矿区钾长花岗岩锆石SHRIMP年龄及其地质意义

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作者	单位	E-mail
<a href="#">聂凤军</a>	<a href="#">中国地质科学院矿产资源研究所</a>	<a href="mailto:nfj@mx.cei.gov.cn">nfj@mx.cei.gov.cn</a>
<a href="#">许东青</a>	<a href="#">中国地质科学院矿产资源研究所</a>	
<a href="#">江思宏</a>	<a href="#">中国地质科学院矿产资源研究所</a>	
<a href="#">胡朋</a>	<a href="#">中国地质科学院矿产资源研究所</a>	

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中文摘要:内蒙古苏-查萤石矿区是全球范围内最大的单一萤石矿区。萤石矿体大多呈似层状和透镜体状在下二叠统火山-沉积岩地层内产出,并且与显生宙花岗岩类侵入岩体具有密切分布关系,其中部分矿体直接出现在敖包吐花岗岩株中。本次研究主要对敖包吐岩株钾长花岗岩进行了锆石SHRIMP铀-铅同位素年龄测定,所获同位素年龄值为 $(138 \pm 4)\text{Ma}$ , MSW为2.3,属中生代燕山期。根据上述同位素年代学数值,同时结合其他地质与地球化学证据,可以推测,中生代时期,受古板块内部构造应力调整作用影响,苏-查萤石矿区及东西两侧曾发生过强烈构造-岩浆活动,并且形成有敖包吐花岗岩株及相关的萤石矿床。中生代燕山期花岗岩类岩浆活动不仅为萤石矿床的形成提供了物质、动力和热力来源,而且是成矿流体对流循环的“发动机”。对比分析结果表明,敖包吐岩体的形成时间与华北陆台中东段许多含矿花岗岩体的成岩时代大体相似,它们很可能是地壳演化特定阶段混源(壳、幔源)岩浆活动的产物。

中文关键词:钾长花岗岩 锆石SHRIMP年龄 敖包吐岩株 苏-查萤石矿区 内蒙古

## Zircon SHRIMP U-Pb Dating of K-Feldspar Granite Samples from the Aobaotu Granite Stock in the Su-Cha ( Sumoqagan Obo) Fluorite Ore District, Inner Mongolia

**Abstract:** Located on the northern margin of the North China continental massif, the Su-Cha (Sumoqagan Obo) fluorite ore district is the largest independent fluorite ore district in the world. Fluorite mineralization occurs in both Late Paleozoic volcano-sedimentary sequences of the Xilimiao Group and Mesozoic granitoid intrusions. Among these granitoid intrusions, the Aobaotu granitoid stock shows an intimate spatial relationship with the fluorite deposits. It intruded into Lower Permian volcano-sedimentary rocks of the Xilin Group, with an outcrop of 66 km<sup>2</sup>. The stock consists mainly of K-feldspar granite in the central facies and marginal facies porphyry-like granites. Petrology, geochemistry and isotopic geology of the Aobaotu stock are similar to those of Paleozoic and Mesozoic granitoid intrusions, with positive Nd (t) values existent within the Da Hinggan Mountain-Mongolia orogenic belt. A fresh K feldspar granite sample from the Aobaotu granitoid stock was selected for SHRIMP U-Pb age dating. The zircon grains separated from the K-feldspar granite sample give a weighted mean <sup>206</sup>Pb/<sup>238</sup>U age of  $138 \pm 4$  Ma, with a MSWD value of 3.2. Based on this zircon SHRIMP U-Pb age and combined with other geological evidence, it is suggested that the Aobaotu granitoid stock and its related fluorite deposits were formed within a reformed rift basin located along the collision zone between the North China continental massif and Siberian platform. The Aobaotu granitoid stock was probably a product of Mesozoic Yanshanian tectonic-magmatic activities, and played an important role in the ore-forming process of the Su-Cha fluorite deposit. The rock-forming materials of the Aobaotu granitoid stock were derived from a mixed source composed of mantle- and crust-related components.