The characteristics of chloritized granite type tin deposit in the Furong tin deposit district in Hunan Province, China

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The Furong tin deposit, which is a large, newly discovered deposit, is located in the southern part of Qitianling granite complex in Hunan province, China. The Qitianling complex mainly is composed of hornblende biotite monzo-granite with an age of 160~165Ma, biotite monzogranite with an age of 152~157Ma and fine-grained granite with an age of 143~147Ma. The complex is characterized by enrichment of alkali, K, Rb, Ba, Th, U, REE, Y, Nb, Ta, Zr, and Hf and belongs to A-type granite. Biotite, lepidolite and sphene of the biotite monzogranite contain up to 0.1wt%, 1wt% and 0.4wt%Sn respectively.

The Furong tin deposit, with estimated tin reserves of circa 600,000 tons, includes the Bailashui-Anyuan, Heishanli-Maziping and Shanmenkou-Guotouling NE-trending ore zones. The most tin reserves are concentrated in the Bailashui ore zone. The chloritized granite type tin deposit is the most important in this zone and occurs within the biotite monzogranie. The No.10 orebody, as an example, is 1310m long, 2.52m to 45.27m with an average of 14.02m wide, and occurs at 1035m to 1140m elevation. The deposit has an average grade of 0.426%Sn, 2.14%Pb, 1.95%Zn and 0.05%Cu. Ores of this type deposit are dominantly composed of cassiterite, chalcopyrite, bornite, galena, sphalerite, rutile, sphene, pyrite, feldspar, quartz, chlorite, sericite, fluorite, calcite, biotite and muscovite. Fine-grained cassiterite is dominantly enveloped in chlorite, with minor associated with rutile and sphene. Alteration can be divided into three stages: early stage including tuormalinization, main stage including sericitization, chloritization and silicification, and late stage including carbonation and fluoritization. The tin mineralization is most intimately associated with strong chloritization. Sericite dominantly replaces feldspar. Tourmaline, quartz, fluorite and calcite are distributed in alteration zone as veinlets. Extensive chloritization took place in the biotie monzogranite. Chlorite belongs to thuringite and chamosite with higher Fe/(Fe+Mg) ratios compatible with those of biotite and hornblende of the biotite monzogranite. Many evidences indicate that the mineralization is related to the evolution of Qitianling A-type granite magma.

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SHRIMP zircon U-Pb dating for gneiss from the Hulan Group of the Xing'an-Mongolian Orogenic Belt, Jilin province, NE China

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The Early-Middle Paleozoic Hulan Group in the Xing'an–Mongolian Orogenic Belt mainly developed in the Hongqiling–Hulan area of south-central Jilin Province of northeastern (NE) China is a suite of low-moderate rank metamorphic formation, with whole-rock Rb-Sr isochron ages between 524±16Ma and 357±23Ma [1]. It can be divided into three units: Huangyingtun, Xiaosangedingzhi and Beichatun Formation. Hongqiling complexes associated with Cu-Ni sulfide deposits were intruded into garnet-biotite gneiss of the Lower Huangyingtun Formation of the Hulan Group. The Huangyingtun Formation is composed mainly of gneiss, granulite and schist, with 40Ar-39Ar plateau dating of 223.6±0.8Ma for biotite from biotite-gneiss and 229.2±4.6Ma for muscovite from moscovite-schist, respectively [2]. We report that newly precise SHRIMP zircon U-Pb dating for garnet-biotite gneiss from the Lower Huangyingtun Formation of the Hulan Group in Hongqiling ore district is 272.2±4.3Ma (n=12, MSWD=2.6). This age is only slightly older than that 40Ar-39Ar dating age data given by Xi *et al.* [3]. It is suggested that the SHRIMP zircon U-Pb dating age may be the age of metamorphic event of Hulan Group which caused Mesozoic collisional orogeny (at least 302-225Ma [3]) in the tectonic domain of the Paleo-Asian-Mongolian Ocean.

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