

TIAN Xiaomin, LIU Xianfan and DENG Jianghong, 2014. Petrography and Mineral Chemistry of Granites in Western Fengqing, Yunnan, China. *Acta Geologica Sinica* (English Edition), 88(supp. 2): 1483-1484.

## Petrography and Mineral Chemistry of Granites in Western Fengqing, Yunnan, China

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### 1 Introduction

A belt of intermediate to acidic intrusive rocks occurs in western Fengqing, Yunnan Province, Occurring in stripe and zonal shapes, and in NNE sapce distribution, and it is eroded by monzonitic granite in Trias, featuring as batholith relies of irregular stripe and zonal shapes. Some researchers have considered that this rock is part of Lincang granite (Xinglin Li, 1996) and the zircon U-Pb age was 288Ma, formed in the Permian, belonged to the products of tectono-magmatic activation in the late Hercynian. On the basis of previous studies, this paper had a preliminary analysis of its genesis from the geological features, petrographic, mineral chemical.

### 2 Graite Petrography

Rocks are primarily types of biotite quartz diorite and granodiorite, structuring in granitic texture, block, while some of roeks feature as gneissoid texture because of tenacity shearing.

Biotite quartz diorite: grey or light grey, fine-medium grained subhedral granular structure, and grain size is between in 0.5~3mm. The rock have massive structure and some have perthitic texture, The major rock-forming minerals include microcline 0~5%, plagioclase 50~80%, quartz 5~10%, biotite 5~10%, Accessory minerals include zircon, titanite, apatite, allanite, zoisite, epidote, hematite and magnetite. Microcline displays ahypidiomorphic granular morphology and cross-hatched twins. It contains inclusions of plagioclase and biotite. Plagioclase has a hypidiomorphic plate-like morphology and albite twins; some grains have girdle structure and sisplay evidence of sericitization and saussuritization. Quartz grains are hypidiomorphic to granular in shape. Biotite is also hypidiomorphic to granular and displays distinct pleochroism.

Granodiorite: light gray, granitic texture, and grain size is between in the 0.4~6mm. The major rock-forming minerals include 5~15% of potash feldspar, 40~70% of plagioclase accounts, 13~40% of quartz, 6~20% of biotite, Accessory minerals include zircon, apatite, allanite, zoisite, epidote, hematite and magnetite. Microcline displays ahypidiomorphic granular morphology and cross-hatched twins. It contains inclusions of plagioclase and biotite. Plagioclase has a hypidiomorphic plate-like morphology and albite twins; some grains have girdle structure and sisplay evidence of sericitization and saussuritization. Quartz grains are hypidiomorphic to granular in shape. Biotite is also hypidiomorphic to granular and displays distinct pleochroism.

The petrographic characters indicate that the rock has strong alteration, including sericitization, chloritization, carbonate lithification and silicification, the metasomatism between potassium and sodium is obvious.

### 3 Chemical Composition of Minerals

Chemical composition analysis by electronic probe show that alkali feldspar components are mainly feldspar with 93%~96%, content of albite is 3.6%~6%, perthite can not be formed. Plagioclase components are mainly albite with 27%~48%, most are andesine. Albite component content in granodiorite is slightly higher than biotite quartz diorite. With zonal structure of plagioclase, the Albite component content showed decreases firstly and then increases from the core to the edge.

Chemical composition analysis show by electronic probe that the biotites are rebalancing primary biotites, belong to magnesia biotite in the biotite classification diagram of Foster. By biotite chemical composition in granites to distinguish the crust, mantle and crust mantle mixed source type is an effective means, it was an important dark mineral. MgO composition content is less than 6% in typical crust source biotite, and is more than 15% in mantle

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biotite (Xiaozheng DENG, 1988), is between 10% and 11% in the biotite of Fengqing granite, so the Fengqing granites belong to crust mantle mixed source type.

#### 4 Conclusions

To sum up, Intermediate-acidic intrusive rocks is mainly biotite quartz diorite and granodiorite in western Fengqing. The mineral association is plagioclase+quartz+alkali feldspar+biotite+accessory minerals (titanite, apatite, zircon). the rock has strongly alteration, including sericitization, chloritization, carbonate lithification and silicification, the metasomatism between potassium and sodium is obvious.

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~48%, most are andesine. alkali feldspar components are mainly feldspar with 93%~96%, MgO composition content is between 10% and 11% in the biotite, The preliminary conclusion is that the granites belong to crust mantle mixed source type.

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