

冯艳芳,姚晓峰,魏友卿,马腾,公凡影,邢光福,张灵芳,孙义伟. 2014. 长乐-南澳构造带燕山期(J-K)TTG岩石组合及其地质意义. 岩石学报, 30(11): 3315-3333

## 长乐-南澳构造带燕山期(J-K)TTG岩石组合及其地质意义

作者	单位
冯艳芳	<a href="#">中国地质调查局发展研究中心, 北京 100037</a> <a href="#">北京大学地球与空间科学学院, 北京 100871</a>
姚晓峰	<a href="#">中国地质调查局发展研究中心, 北京 100037</a>
魏友卿	<a href="#">中国地质大学地球科学与资源学院, 北京 1000831</a>
马腾	<a href="#">中国地质调查局发展研究中心, 北京 100037</a>
公凡影	<a href="#">中国地质调查局发展研究中心, 北京 100037</a>
邢光福	<a href="#">中国地质调查局南京地质矿产研究所, 南京 210016</a>
张灵芳	<a href="#">中国石油天然气管道工程有限公司, 廊坊 065000</a>
孙义伟	<a href="#">中国地质大学地球科学与资源学院, 北京 1000831</a>

**基金项目:** 本文受中国地质调查局项目(1212010610611、1212010733802、1212010711814)和国家自然科学基金项目(GPMR0735)联合资助。

### 摘要:

长乐-南澳构造带火成岩类多年来备受国内外地质学界关注和瞩目,但对其构造环境的认识却存在较大分歧.本文通过分析构造带燕山期(J-K)火成岩类的时空分布、岩石学特征及其TTG岩石组合等,讨论厘定构造带的构造性质与岩浆源区.据构造带花岗岩类岩石结构构造特征、锆石SHRIMP U-Pb与LA-ICP-MS U-Pb同位素定年,测年结果集中分布于200~191Ma、155~97Ma与84~69Ma三个区间,暗示构造带燕山期(J-K)岩浆活动可以划分为三个阶段:(1)早侏罗世(J<sub>1</sub>),以片麻岩类与糜棱岩类为主;(2)晚侏罗世-早白垩世(J<sub>3</sub>-K<sub>1</sub>),片麻状花岗岩类占优势;(3)晚白垩世(K<sub>2</sub>),出现大量的晶洞花岗岩类与脉岩类.采用O'Connor An-Ab-Or标准矿物分类方案识别TTG岩石组合获知,早侏罗世(J<sub>1</sub>)与晚侏罗世-早白垩世(J<sub>3</sub>-K<sub>1</sub>)时,构造带存在TTG岩石组合;晚白垩世(K<sub>2</sub>)时,构造带TTG岩石组合消失,发育典型的双峰式火成岩. TTG岩石组合以钙性(C)和中钾钙碱性(MKCA)为主,显示奥长花岗岩演化趋势(Tdj),具大陆边缘弧花岗岩(CAG)的特征,由此可推断长乐-南澳构造带燕山期(J-K)构造性质为主动大陆边缘弧.构造带发育两类成因机制的TTG岩石组合,分别来自不同的岩浆源区:具镁安山质(MA)性质的TTG岩浆来源于玄武质洋壳的脱水熔融,具正常安山质(A)性质的TTG岩浆来源于陆壳底部玄武质岩石的局部熔融.

### 英文摘要:

The magmatic rocks developed along the Changle-Nan'ao tectonic belt in the southeastern coast of China have received wide attention from various geological circles both at home and abroad, but there are great bifurcations as yet on the structural environment of the formation of the magmatic rocks. On the basis of spatial and temporal distribution, petrological features and rock association of TTG studies during Yanshanian period (J-K), this paper aims at the discussion on the tectonic characteristics and magmatic source of the tectonic belt. According to the textural and structural features of the granitoids developed in the tectonic belt, combined with high-precision U-Pb isotopic dating, the chronological framework of the granitoids can preliminary be divided into three stages, namely, Early Jurassic (J<sub>1</sub>) (200~191Ma) gneisses and mylonites, Late Jurassic-Early Cretaceous (J<sub>3</sub>-K<sub>1</sub>) (155~97Ma) gneissic granites and Late Cretaceous (K<sub>2</sub>) (84~69Ma) miarolites and their dyke-rocks. By using O'Connor An-Ab-Or Standard mineral classification scheme, TTGs has been identified. TTG rock assemblages developed in the tectonic belt during Early Jurassic (J<sub>1</sub>) and Late Jurassic-Early Cretaceous (J<sub>3</sub>-K<sub>1</sub>). In Late Cretaceous (K<sub>2</sub>) TTG rock assemblages disappeared but bimodal volcanic rock developed in the belt. The geochemistry of the TTGs are mainly calcic (C) and medium-K calcalkalic (MKCA) exhibiting the evolution trend of trondjemite (Tdj) bearing the characteristics of continental arc granite (CAG). It is inferred that the Changle-Nan'ao tectonic belt bears the characteristics of active continental margin arc. The tectonic belt developed two types of TTGs with different genesis mechanism and magmatic sources. The geochemistry of TTG magma similar to Mg andesitic magma (MA) and normal andesitic magma (A) derived separately from dehydration melting of basaltic oceanic crust and partial melting of basaltic rocks at the bottom of continental crust.

**关键词:** [长乐-南澳构造带](#) [燕山期\(J-K\)](#) [TTG岩石组合](#) [大陆边缘弧](#) [岩浆源区](#)

**投稿时间:** 2014-02-01 **修订日期:** 2014-05-25

黔ICP备07002071号-2

主办单位：中国矿物岩石地球化学学会

印刷版(Print): ISSN 1000-0569 网络版 ( Online ) : ISSN 2095-8927

单位地址：北京9825信箱/北京朝阳区北土城西路19号

本系统由北京勤云科技发展有限公司设计