



刘福来, 许志琴, 宋彪. 苏鲁超高压变质带中非超高压花岗质片麻岩的准确识别: 来自锆石微区矿物包体及SHRIMP U-Pb定年的证据[J]. 地质学报, 2003, 77(4): 533-539

苏鲁超高压变质带中非超高压花岗质片麻岩的准确识别: 来自锆石微区矿物包体及SHRIMP U-Pb定年的证据 [点此下载全文](#)

[刘福来](#) [许志琴](#) [宋彪](#)

中国地质科学院地质研究所大陆动力学实验室, 中国地质科学院地质研究所大陆动力学实验室, 中国地质科学院地质研究所北京离子探针中心
北京 100037, 北京 100037, 北京 100037

基金项目: 国家自然科学基金(编号 40300000), 国土资源部科技项目“中国大陆科学钻探工程综合研究”(编号 2002207), 国家重大科学工程“中国大陆科学钻探工程项目”, 国土资源部百名优秀青年科技人才计划项目的部分成果

DOI:

摘要点击次数: 115

全文下载次数: 91

摘要:

通过隐藏在锆石微区矿物包体激光拉曼的系统鉴定和阴极发光图像特征的详细研究, 配合相应的锆石微区SHRIMP U-Pb定年测试, 发现苏鲁地体超高压变质带中确实存在非超高压变质的花岗质片麻岩。该类岩石中的锆石晶体自核部到边部所保存的矿物包体以不含超高压矿物为特征, 相应的阴极发光图像具有典型岩浆结晶锆石的核部和幔部, 以及变质的再生边的特点。其中岩浆结晶锆石微区记录的 $-(238)U--(206)Pb$ 年龄为 $404 \sim 748Ma$, 表明原岩中部分锆石可能经历了Pb丢失, 也不排除后期热事件因素的影响, 原岩的形成年龄应大于 $748 Ma$; 而锆石的再生边所记录的 $-(238)U--(206)Pb$ 年龄为 $204 \sim 214 Ma$, 与研究区经历超高压变质的副片麻岩和花岗质片麻岩锆石微区所记录的苏鲁地体快速折返过程中角闪岩相退变质年龄 $-(238)U--(206)Pb$ 年龄的平均值为 $211 \pm 4 Ma$, 刘福来等, 2003a)十分相似。上述特征表明, 苏鲁地体超高压变质带中的部分花岗质片麻岩在超高压变质事件之前就已经形成, 但并未“参与”深俯冲—超高压的变质演化过程, 而是在苏鲁地体快速折返的角闪岩相退变质过程中与超高压岩片“拼贴”在一起。该项成果不仅为正确识别非超高压变质岩石提供了一个新的研究方法, 而且对进一步深入探讨苏鲁地体超高压和非超高压岩片的“拼贴”机制有着重

关键词: [非超高压](#) [花岗质片麻岩](#) [锆石](#) [矿物包体](#) [激光拉曼](#) [阴极发光](#) [SHRIMP U-Pb定年](#) [苏鲁](#) [地体](#)

Precise Restriction of Non-UHP Granitic Gneiss from the UHP Metamorphic Belt in the Sulu Terrane, Eastern China: Evidence from Mineral Inclusions, Cathodoluminescence Images and SHRIMP U-Pb Dating in Zircon Domains [Download Fulltext](#)

LIU Fulai, XU Zhiqin, SONG Biao. Laboratory of Continental Dynamics, Institute of Geology, CAGS, Beijing, 100037 SHRIMP Laboratory of Beijing, Institute of Geology, CAGS, Beijing, 100037

Fund Project:

Abstract:

A combined study of Laser Raman spectroscopy, cathodoluminescence (CL) image and SHRIMP U-Pb dating reveals that some granitic gneisses distributing in drillhole CCSD-PP1 in the Zhimafang and Fangshan areas of the southwestern Sulu terrane do not have ultrahigh pressure (UHP) metamorphism. Most zircons separated from such granitic gneisses retain inherited cores and mantles with abundant low-pressure mineral inclusions and impurities, and the metamorphic overgrowth rims contain quartz and other low-pressure mineral inclusions. The relative cathodoluminescence image reveals a primary magmatic crystallization pattern in the core and mantle, and an irregular zoning pattern in the rim. SHRIMP U-Pb analyses of zoned zircons were performed to constrain the age and geochronological significance of the non-HP granitic gneisses. In generally, the cores and mantles of zircons from non-HP granitic gneisses recorded 404-748 Ma ($238U-206Pb$ age) for inherited zircons, implying partial loss of Pb from zircon in the protolith; the protolith age should be older than 748 Ma. While the overgrowth rims of zircons recorded 204 - 214 Ma ($238U-206Pb$ age) for the late-stage amphibolite facies metamorphism related to rapid exhumation of the Sulu terrane, which is similar to that (the weighted mean age of $238U-206Pb = 211 \pm 4 Ma$; Liu et al., 2003a) recorded by the retrogressive rims of the zircons from the analyzed UHP paragneisses and UHP granitic gneisses in the southwestern Sulu terrane. These data indicate that part of the UHP granitic gneisses were intruded into supracrustal rocks prior to UHP metamorphism, but did not experience deep-obduction and UHP metamorphism during the middle Triassic. During the late Triassic, with rapid uplifting of the Sulu terrane, the non-UHP granitic gneisses were put together with the middle Triassic UHP metamorphic slabs and experienced amphibolite facies retrogressive metamorphism.

Keywords: [non-ultrahigh pressure](#) [granitic gneiss](#) [zircon](#) [mineral inclusion](#) [Laser Raman](#) [cathodoluminescence](#) [SHRIMP U-Pb dating](#) [Sulu terrane](#)

[查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

您是第574861位访问者 版权所有《地质学报(中文版)》

地址: 北京阜成门外百万庄26号 邮编: 100037 电话: 010-68312410 传真: 010-68995305

本系统由北京勤云科技发展有限公司设计

