

张彦龙,赵旭晔,葛文春,张吉衡,高妍. 2010. 大兴安岭北部塔河花岗杂岩体的地球化学特征及成因. 岩石学报, 26(12): 3507-3520

大兴安岭北部塔河花岗杂岩体的地球化学特征及成因

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基金项目: 本文受国家自然科学基金项目(40972041、40739905)资助.

摘要:

塔河杂岩体位于塔源-喜桂图缝合带北侧的额尔古纳地块东部,是早古生代侵入的花岗杂岩体。该杂岩体的主要岩石类型为正长花岗岩、二长花岗岩,少量碱长花岗岩和花岗闪长岩,辉长岩以包体存在于花岗岩中。岩石成因类型为典型的I型后造山侵入体。岩体在野外地质特征、矿物组合、显微结构、化学成分及锆石Hf同位素特征等方面都表现出岩浆混合成因。在早古生代额尔古纳地块与兴安地块拼合后的后造山伸展拉张背景下,地壳和地幔都发生部分熔融,直接起源于亏损地幔的玄武质岩浆侵入到地壳熔融的花岗质岩浆房,经结晶分异作用,形成了塔河杂岩体不同的岩石类型。花岗岩的 $\epsilon_{\text{Hf}}(t)$ 为-0.8~+5.6之间,Hf模式年龄在0.9~1.5Ga之间,反映塔河花岗岩的源岩应该是在中-新元古代时期由亏损地幔起源的新生地壳物质。结合额尔古纳地块早古生代和中生代花岗岩锆石Hf同位素资料,我们认为额尔古纳地块在中-新元古代时曾发生过一次重要的地壳增生事件。

英文摘要:

Take pluton is a granitic complex formed in Early Paleozoic, which locates in the eastern Ergun block near the north side of Tayuan-Xiguitu suture zone. It is mainly composed of syenogranite, monzogranite, with minor alkali-feldspar granite and granodiorite. Gabbroic enclaves are enclosed by granitic rocks. The complex is classified as post-orogenic I-type intrusion, with the characteristics of high-K calc-alkaline series. Characteristics of outcrop, microstructures, mineral assemblages, chemical and zircon Hf isotopic compositions show magma mixing during the petrogenesis definitely. At Early Paleozoic, the crust and mantle underwent partial melting under an extensional environment following the collision between the Ergun and the Xing'an blocks. The basaltic magma which originated from depleted mantle mixed with granitic magma melted by lower crust, and then formed different rock types of Take complex through fractionation crystallization. The $\epsilon_{\text{Hf}}(t)$ values (from -0.8 to +5.6) and Hf model ages (0.9~1.5Ga) of the granites indicate that the source rocks of Take granite were juvenile crustal materials mainly originated from depleted mantle in Mid-Neoproterozoic. Combined with previously published zircon Hf isotopic data of the Early Paleozoic and Mesozoic granites in the Ergun block, it is concluded that Ergun block underwent an important episode of crustal growth in Mid-Neoproterozoic.

关键词: [塔河花岗杂岩体](#) [岩浆混合作用](#) [锆石Hf同位素](#) [地壳增生](#)

投稿时间: 2009-11-18 最后修改时间: 2010-05-07

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本系统由北京勤云科技发展有限公司设计

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