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摘要:

阿尔泰山南缘晚古生代火山岩十分发育, 从早泥盆世到早二叠世均有发育。其中中泥盆世北塔山组为一套中基性火山岩, 并且底部含有厚度超过100m的苦橄岩; 中泥盆世蕴都喀拉组为一套浅海相碎屑沉积岩夹中性、中基性火山岩; 晚泥盆世江孜尔库都克组为火山碎屑岩夹中基性和酸性火山岩组合; 而晚石炭世巴塔玛依内山组以玄武岩和玄武安山岩为主, 夹凝灰岩、粉砂岩和炭质页岩。对这4个组火山岩的主要元素、微量元素地球化学特征研究表明, 北塔山组和蕴都喀拉组为拉斑和钙碱性系列, 并且均具有大离子亲石元素(LILE)富集, 而高场强元素与MORB相当, 说明其为岛弧环境。江孜尔库都克组火山岩为钾玄岩系列, 并且具有较高的LILE富集, 表明其形成于岛弧演化的晚期阶段; 巴塔玛依内山组火山岩为碱性系列, 并且具有强烈富集LILE的特征, 指示了其形成于大陆板内环境。因此, 从火山岩的时间和空间演化来看, 本区晚古生代火山岩与准噶尔洋板块向北的俯冲有关, 西伯利亚板块和准噶尔板块的碰撞发生在早石炭-晚石炭世。

关键词: [火山岩](#) [地球化学](#) [晚古生代](#) [构造演化](#) [阿尔泰山南缘](#)

Geology and Geochemistry of the Late Paleozoic Volcanic Rocks of the South Margin of the Altai Mountains and Implications for Tectonic Evolution [Download Fulltext](#)

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Abstract:

The Late Paleozoic volcanic rocks (from Early Devonian to Early Permian) were widely distributed in the south margin of the Altai Mountains. The Middle Devonian Beitashan Formation (Fm.) consists of a series of intermediate-basic volcanic rocks intercalated with more than 100 m thick picritic layer at the bottom, whereas the Middle Devonian Yundukala Fm. is composed of a series of shallow-sea fine-clastic rocks interbedded intermediate rocks and intermediate-basic rocks. The Late Devonian Jiangzierkuduke Fm. includes pyroclastic rocks intercalated with intermediate-basic and intermediate-acid rocks, whereas the Late Carboniferous Batamayineishan Fm. consists chiefly of basalts and basaltic andesites intercalated with tuff, siltstone and carbonaceous shale. On the basis of their major and trace element geochemistry of these four Fms., the Beitashan and Yundukala Fms. include tholeiite and calc-alkaline series, characterized by the enrichment of large ion lithophile elements, and the high field strength element contents close to MORB, which suggest that they formed an arc-island setting. The volcanic rocks of the Jiangzierkuduke Fm. belong to shoshonite series, and is also characterized by relative high LILE enrichment, suggesting the late stage of island arc. Those of the Batamayineishan Fm. belong to alkaline series, characterized by strong enrichment of LILE, implying that they formed in intracontinental plate. Consequently, according to temporal and spatial evolution, it can be inferred that the Late Paleozoic volcanic rocks resulted from the northward subduction of Junggar plate, and the collision between Siberian plate and Junggar plate occurred at the boundary between Early and Late Carboniferous.

Keywords: [volcanic rocks](#) [geochemistry](#) [late paleozoic](#) [tectonic evolution](#) [the Altai Mountains](#)

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