

**ZIRCONS OVERPRINTED BY RODINGITIZATION AND THEIR U-Pb AGES  
FROM A SERPENTINITE COMPLEX, WESTERN TIANSHAN**

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Tianshan rodingite derives from eclogite enclosed in the ultramafic rocks of Changawuzi ophiolites in the Southwestern Tianshan ophiolitic mélangé. Serpentinized ultramafic rocks occur together with interlayered south-dipping blueschists and greenschists in Changawuzi ophiolites suggesting a relict Silurian oceanic crust. Rodingites contain a mineral assemblage of prehnite, clinozoisite, hydrogrossular, diopside, vesuvianite and chlorite, while partial rodingitized rocks still preserve the relict omphacite and Fe-Mg-Al garnet. The rodingitization started at 370 - 410 °C / 6.5 - 8.5 kbar, while pervasive rodingitization took place under conditions of 200 - 350 °C / 2 - 6 kbar. Cathodoluminescence reveals that the most zircon grains from the intensely rodingitized rock consist of distinct rim and core. The jagged cracks cross zircon rim, showing clear fluid channels to the core. A well defined group <sup>206</sup>Pb / <sup>238</sup>U age of 422 ± 10 Ma (2 sigma) from rims of zircon shows an age of middle Silurian, suggesting the hydrothermal metamorphic age of Silurian oceanic crust. The ages from cores of zircons in rodingites vary from 422 Ma to 291 Ma, implying a continuous fluid alteration to the core of zircon during exhumation and giving mixed ages. REE patterns obtained by LA-ICP-MS analyses from zircons of the rodingite are also variable from recrystallized core to the zircon rim, which are clearly correlated to the extent of hydro-metamorphic overprint. The higher the total amount of REE present in the core of the zircon, the younger its apparent age. The lower boundary of the core age was constrained by single grain zircons in the rodingite, which have no zoning texture observed. These single grain zircons around 291 Ma are considered formed during pervasive rodingitization, and the age correspondingly represents the event of intensive rodingitization during the collision of the Tarim and Yili-Central Tianshan plate. Zircons newly formed during pervasive rodingitization reflect a Late Paleozoic event, in which the dehydration of a subducted slab lead to arc magmatism and low-P granulite-facies metamorphism with SHRIMP U-Pb zircon ages of 290 - 280 Ma in the northern belt (LI & ZHANG, 2004), and provided abundant fluid for rodingitization in the exhuming HP terrane.

**Reference**

LI, Q. & ZHANG, L. (2004): The PT path and geological significance of low-pressure granulite-facies metamorphism in Muzhaerte, southwest Tianshan, Xinjiang, China: *Acta Petrologica Sinica*, 20, 583-594.