ZHANG Lifei, WANG Yang, ZHANG Lijuan and LÜ Zeng, 2018. Ultrahigh pressure metamorphism and tectonic evolution of southwestern Tianshan orogenic belt, China: a comprehensive review. *Acta Geologica Sinica* (English Edition), 92(supp.2):47.

Ultrahigh Pressure Metamorphism and Tectonic Evolution of Southwestern Tianshan Orogenic Belt, China：A Comprehensive Review

ZHANG Lifei*, WANG Yang, ZHANG Lijuan and LÜ Zeng

School of Earth and Space Sciences, Peking University, Beijing 100871, China

Abstract

Recently, a huge ultrahigh-pressure (UHP) metamorphic belt of oceanic-type has been recognized in southwestern (SW) Tianshan, China. Petrological studies show that the UHP metamorphic rocks of SW Tianshan orogenic belt include mafic eclogites and blueschists, felsic garnet phengite schists, marbles and serpentinites. The well-preserved coesite inclusions were commonly found in eclogites, garnet phengite schists and marbles. Ti-clinohumite and Ti-chondrodite have been identified in UHP metamorphic serpentinites. Based on the PT pseudosection calculation and combined U-Pb zircon dating, the P-T-t path has been outlined as four stages: cold subduction to UHP conditions before ~320 Ma whose peak ultrahigh pressure is about 30 kbar at 500oC , heating decompression from the Pmax to the Tmax stage before 305 Ma whose peak temperature is about 600oC at 22kbar, then the early cold exhumation from amphibolite eclogite facies to epidote-amphibolite facies metamorphism characterized by ITD PT path before 220 Ma and the last tectonic exhumation from epidote amphibolite facies to greenschist facies metamorphism. Combining with the syn-subduction arc-like 333-326 Ma granitic rocks and 280-260 Ma S-type granites in the coeval low-pressure and high-temperature (LP-HT) metamorphic belt, the tectonic evolution of Tianshan UHP metamorphic belt during late Cambrian to early Triassic has been proposed.

*Corresponding author. E-mail:Lfzhang@pku.edu.cn