

Paper Number: 2528

## The tectonic evolution of UHP metamorphic belt of SW Tianshan, China

Zhang, L.<sup>1</sup>, Du, J.<sup>1</sup>, Lü, Z.<sup>1</sup>, Shen, T.T.<sup>1</sup>, Gou, L.L.<sup>2</sup> and Xia, B.<sup>3</sup>

<sup>1</sup>School of Earth and Space Sciences, Peking University, Beijing 100871, China

<sup>2</sup>Department of Geology, Northwest University, Xi'an 710069, China

<sup>3</sup>Faculty of Earth Science, China University of Geosciences, Wuhan 430074, China

---

Recently, a huge, more than 80 km long, UHP metamorphic belt of oceanic type has been recognized in the SW Tianshan, China [1]. It was formed by the northward subduction of the Tianshan Paleo-Asian Ocean. Petrological studies show that the UHP metamorphic rocks of SW Tianshan orogenic belt include three groups: mafic eclogite and blueschist, felsic garnet–phengite schist and serpentinites. Well-preserved coesite inclusions are commonly found in lawsonite-bearing eclogite and garnet–phengite schist. Ti-clinohumite and Ti-chondrodite have been identified in serpentinite [2]. The PT pseudosection calculations show that both eclogites and garnet–phengite schists have similar PT paths characterized by peak PT conditions of 450–500°C and 2.6–2.8 GPa and then heating to the maximum temperature of 550–600°C during decompression, which is quite different from other oceanic subduction zone metamorphism [3]. Based on the zircon U-Pb dating, peak UHP metamorphic ages of  $320 \pm 3.7$  Ma and retrograde eclogite facies ages of 230–240 Ma have been obtained [4]. Syn-subduction arc-like 333–326 Ma granitic rocks and 266–278 Ma S-type granites have been recognized in SW Tianshan orogenic belt [5]. Dehydration of UHP metamorphic rocks from P<sub>max</sub> to T<sub>max</sub> results in the formation of coeval arc magmatic rocks and post S-type granites. A petrotectonic evolution of the SW Tianshan orogenic belt based on these studies of UHP rocks and coeval magmatic rocks has been proposed.

### *References:*

[1] Zhang et al. (2013) *Chin. Sci. Bull.* 58: 4378-4383

[2] Shen et al. (2015) *J. Petrol.* 56: 1425-1458

[3] Lü et al. (2009) *JMG* 27: 773-787

[4] Yang et. (2013) *JAES* 70: 295-307

[5] Gou et al. (2012) *Lithos* 136: 201-224

