

WANG Bo, CLUZEL Dominique, JAHN Bor-ming, SHU Liangshu, CHEN Yan, BRANQUET Yannick and BARBANSON Luc, 2013. Structural, Geochronological and Geochemical Studies on Pre- and Syn-Kinematic Intrusions in the Kangguer - Huangshan Shear Zone, and Implications for Late Paleozoic Tectonic Evolution of the Eastern Chinese North Tianshan, Central Asia. *Acta Geologica Sinica* (English Edition), 87(supp.): 316.

Structural, Geochronological and Geochemical Studies on Pre- and Syn-Kinematic Intrusions in the Kangguer - Huangshan Shear Zone, and Implications for Late Paleozoic Tectonic Evolution of the Eastern Chinese North Tianshan, Central Asia

WANG Bo^{1,*}, CLUZEL Dominique², JAHN Bor-ming³, SHU Liangshu¹, CHEN Yan⁴,
BRANQUET Yannick⁴ and BARBANSON Luc⁴

1 State Key Laboratory for Mineral Deposits Research, School of Earth Sciences and Engineering, Nanjing University, Nanjing 210093, China

2 Pôle Pluri-disciplinaire de la Matière et de l'Environnement-EA 3325, Université de la Nouvelle-Calédonie, BP R4, 98851 Noumea cedex, New Caledonia

3 Department of Geological Sciences, National Taiwan University, Taipei, 10617

4 Institut des Sciences de la Terre d'Orléans, UMR 7427 - CNRS/ Université d'Orléans, 1A, rue de la Férollerie, 45071 Orléans cedex 2, France

Permian large-scale transcurrent tectonics and massive magmatism are predominant features of the Tianshan belt, and its neighboring regions within the Central Asian Orogenic Belt. We conducted structural, geochronological and geochemical studies on the Carboniferous and Permian intrusive rocks occurring in the Kangguer – Huangshan Shear Zone, eastern Chinese North Tianshan in order to understand their tectonic setting and to put more constraints on the tectonic evolution of the Tianshan belt. The Carboniferous granitic rocks from North Huangshan and East Kanggurtag areas emplaced in 338 ± 4 Ma and 347 ± 2 Ma, respectively, and show geochemical features of typical calc-alkaline series. These arc-type granites were not ductily deformed probably due to relative “solid” petrophysical feature and only cut and offset by strike-slip faults. Four gabbro and diorite samples from East Huangshan intrusive complex yield zircon U-Pb ages of 267–275 Ma, and a granitic dyke is dated at 290 ± 1 Ma. The granitic dyke is cut by echelon right-lateral strike-slip fault, and the mafic intrusive complex display a sigmoidal shape with mylonitic deformation localized in the marginal facies. Other particular shapes (such as Tongue and tadpole-like) and syn-magmatic deformation can be observed in synchronous intrusions, and showing similar fabrics and

consistent kinematics with those in the Kangguer – Huangshan Shear Zone. Plenty of mafic to felsic dykes occur within and off the shear zone with a dominant orientation in SE-NW direction and minor varieties in N-S or NNE-SSW directions. One gabbroic dyke intruding the Carboniferous granite of East Kanggurtag area yielded an age of 274 ± 4 Ma, and comprises several groups of old zircons (~ 340 Ma, ~ 390 Ma, ~ 450 Ma and 1.3–2.2 Ga). The Permian intrusive rocks have variable geochemical compositions including N-MORB-like and E-MORB sources with involvement of subduction-related components. On the basis of a comprehensive analysis of the geochemical and geochronological results from the literatures for the Permian Kangguer – Huangshan Shear Zone and coeval magmatic rocks, combined with the geological and structural data, we consider that the Permian magmatic rocks formed in a post-collisional / orogenic setting, where multiple-sourced magma emplaced under control of large-scale dextral strike-slip shearing.

Key words: Paleozoic, Permian, Central Asia, Tianshan, Kanggur - Huangshan shear zone, post-collision, syn-kinematic magmatism

* Corresponding author. E-mail: bwang@nju.edu.cn