# Constraints on the Ordovician-Silurian boundary from SHRIMP U-Pb zircon ages of a potassic bentonite

Y.H. HU[1,3]*, J.B. ZHOU[1] AND W.D. SUN[1,2]

[1]Guangzhou Institute of Geochemistry, The Chinese Academy of Sciences, Wushan, Guangzhou 510640
[2]School of Earth and Space Sciences, University of Science and Technology of China, Hefei 230026
[3]Graduate University of the Chinese Academy of Sciences, Beijing 100049 (*correspondence: yanhuahu@gig.ac.cn)

SHRIMP U-Pb dating yielded concordant ages with a weighted mean of 443.2 ± 1.6 Ma (95% confidence, MSWD = 1.21, N = 18) for zircon from a potassic bentonite layer near the top of the Upper Ordovician in the Wangjiawan Section, Yichang, China [1]. The Wangjiawan Section was ratified as the Global boundary Stratotype Section and Point (GSSP) for the base of the Hirnantian Stage (the latest stage of the Ordovician) by the International Commission on Stratigraphy (ICS) in 2006 [2]. The studied samples were collected from a potassic bentonite layer in the Kuanyinchiao Bed of the Wanjiawan Section, which have been well-constrained by biostratigraphy. Therefore, this age gives the upper limit of the Ordovician-Silurian boundary. It is identical within error to the age (443.7 ± 1.5 Ma) of the Rhuddanian Stage, which lies above the Hirnantian Stage. It also is equal to the Ordovician-Silurian boundary age declared by the International Commission on Stratigraphy (ICS) [3].

The Hirnantian Stage is recognized as the last Ordovician Stage and has a duration of < 2 Myr. It records the second largest global mass extinction in the Earth's history, with ~85% of species becoming extinct during this time interval [4]. This event is defined by distinctive biostratigraphy, lithostratigraphy, sedimentology, and chemostratigraphy. So, the representative strata of the Hirnantian Stage has attracted wide interests among geologists, especially stratigraphers, all over the world. Our results provide preliminary geochronological data for the Hirnantian Stage, and the Ordovician-Silurian boundary, as well as for global stratigraphic correlation. More precise dating is needed to delineate the Hirnantian-Rhuddanian boundary, i.e., the Ordovician-Silurian boundary.

[1] Hu Y.H. *et al.* (2008) *Sci China Ser (D)* **38**(1),72-77.
[2] Chen X. *et al.* (2006) *Episodes* **29**(3), 183-196.
[3] Gradstein F.M. *et al.* (2004) *Episodes* **27**(2), 83-100.
[4] Sheehan P.M. (2001) *AREPS* **29**, 331-364.

# Difference between REE and W during differentiation of their host granitoids and hence different mineralization types in the Nanling region, South China

R.M. HUA*, W.L. ZHANG AND S.Y. GU

State Key Laboratory of Mineral Deposit Research, Nanjing University, Nanjing 210093, China
(*correspondence: huarenmin@nju.edu.cn)

Both W and REE deposits are extensively distributed in the Nanling region, South China, which were genetically closely related with granitoids. However, the mineralizations of the two types are quite different each other. The mineralization of W is a typical hydrothermal process, whereas the REE mineralization in this region is mainly caused by surface weathering. This difference is originally the result of different features between W and REE in the differentiation of their host granitoids. W contents gradually increase together with the differentiation and evolution of their host granitoids, so that the W deposition was mainly accompanied with the highly-evolved late-staged small granite intrusion. However, REE contents generally decrease in the late-staged granite due to the destruction of REE-bearing minerals, such as biotite and many accessory minerals, e.g. monazite, allanite, xenotime, parisite, etc. For example, ΣREE contents in the three plutons from the Wuliting-Dajishan granite complex in southern Jiangxi are 355ppm, 109ppm, and 33ppm from the earliest biotite granite, to medium grain muscovite granite, and latest fine-grain muscovite granite, respectively. As a result, the REE-rich biotite granite became the mother rock of a weathered-crust type REE deposit, while the later-staged muscovite granite hosted large-scale W and Nb-Ta deposits. The Huashan-Guposhan granite in northeastern Guangxi exhibits same characteristics, i.e. plutons of earlier stage have REE contents 411~358ppm which yielded REE placers, whereas the later intrusions 255~161ppm associated with Wn and Sn mineralizations.