

# Neoproterozoic dioritic-granitic complexes of the Yangtze craton, petrogenesis and its tectonic significances

WENLI LING<sup>1,2</sup>, JIANPING CHENG<sup>1</sup> AND BANGFANG REN<sup>1,2</sup>

<sup>1</sup>Faculty of Earth Sciences, China University of Geosciences, Lumo Rd 388, Wuhan, Hubei, 430074, China  
(wlling@cug.edu.cn), (jpcheng@cug.edu.cn)

<sup>2</sup>State Key Laboratory of Geo-Processes and Mineral Resources, Lumo Rd 388, Wuhan, Hubei, 430074, China

Among the Neoproterozoic plutons, the Hannan and Huangling complexes, located at the northern margin and central region of the Yangtze craton, respectively, are two of the most representative dioritic-granitic intrusive groups.

The Huangling complex (~2100km<sup>2</sup>), emplaced into the Archean basement and covered by the stratotype for the Sinian System of South China (740-540 Ma), is composed of four suites. The Huanglingmao (tonalite-granodiorite in lithology), Shandouping (tonalite), and Dalaolin (granodiorite-monzogranite) suites were dated at 819±7, 795±8 and 794±7 Ma[1], respectively. Most samples from the suites display high (La/Yb)<sub>N</sub> (4-60) and Sr/Y (30-180) ratios and depleted in Nb, Ta, Ti and P, which typical of Archean TTG gneisses or Phanerozoic adakite. However, dioritic samples exhibit high MgO (>6 wt%), Mg# (>60) and Cr (>100ppm), Ni (>300ppm) at SiO<sub>2</sub>≤60 wt %, characteristic of Archean high Mg diorite or sanukitoid rocks. The Huangling samples are also featured by highly negative ε<sub>Nd</sub>(t) values of -8 to -21 and T<sub>DM</sub> ages of 2.9 to 1.8 Ga.

The Hannan complex are composed of bimodal dioritic-granitic and gabbroic plutons, which were dated at 789±10[1] and 819-808 Ma[2], respectively. The felsic intrusives are tonalitic dominate and show similar elemental geochemistry with those from the Huangling. However, the Hannan felsics demonstrate ε<sub>Nd</sub>(t) of 0 to 4 and T<sub>DM</sub> ages of 1.4 to 1.0 Ga, which are indiscriminating from basaltic rocks from the Xixiang Group, early Neoproterozoic basement in the region.

Both of the coeval complexes reveal a genesis of lower crustal anatexis of mafic rocks caused by underplate conductive heating joined with variable mantle fluxes, suggesting that the dioritic-granitic complexes should be resulted from a common tectono-thermal event with a craton-crossing scope in active range. Coupled with a continental interior setting for the Huangling complex, a reasonable interpretation of a mantle plume development during 0.82-0.79 Ma beneath the Yangtze craton is advocated.

## References

- [1] Ling W.L., Gao S., Cheng J.P., Jiang L.S., Yuan H.L., Hu Z.C. (2006) *Acta Petrologica Sinica* 22, 387-396.
- [2] Zhou M.F., Kennedy, A.K., Sun M., Malpas J., Leshner M. (2002) *J Geology* 110, 611-618.