Early Neoproterozoic arc magmatism along the northwestern margin of the Yangtze craton and its connection with the South China Block evolution during the Rodinia assembly

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The South China Block (SCB) comprises the Yangtze craton and the Cathysian block, welded during ~1.0-0.95 Ga. Neoproterozoic igneous activities of ~830-750 Ma are widely recorded in the SCB. However, their origin and tectonic setting have long been debated, resulted in competing models for the correlation of the SCB with Rodinia supercontinent.

The Wangcang igneous complex occurs along the northwestern Yangtze craton, which has long been regarded as early Precambrian basement. Our present study reveals that both the intrusive and volcanic suites were formed at ~880 Ma. The mafic rocks show tholeiitic geochemistry with initial ε_{Nd} values of +2.1 to +7.7, whereas the felsic samples are calc-alkaline series with a ε_{Nd} range of -2.1 to +4.7. These suites are suggested to have an arc magmatic origin, and their intensive deformation and high metamorphism occurred during ~880-820 Ma.

Integrating with proofs such as Nd isotope stratigraphic studies of the Yangtze craton, we suggest that the Yangtze craton had experienced a continent growth during the Rodinia assembly by microcontinent merging before the SCB unification. This study was supported by National Nature Science Foundation of China (Grants 40873017, 40673025).

The advantage of the use of Focused Ion Beam technique to specify the mantle fluid inclusions

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The Focused Ion Beam (FIB) coupled with scanning electron microscopy (SEM) technique has became one of the most promising tools for many geochemical studies in the last decade [1].

It is known that within the fluid inclusions solids (referred to as daughter phases) may crystallize as a result of cooling and/or reaction with their host mineral. If the volume proportions of the daughter phases are not known, the fluid composition determined can be misinterpreted. However, *in situ* measurement of the daughter phases can be complicated and ambiguous with conventional techniques because of their size and/or composition. In this study we report our results using FIB-SEM technique on investigation of daughter phases in orthopyroxene-hosted fluid inclusions in mantle xenoliths from the Pannonian Basin (Hungary).

Solid phases such as magnesite and quartz have been found within the fluid inclusions. They have a size between 200 – 2000 nm occurring as cluster on some parts of the inclusion walls. In addition, S-bearing solid phase (probably sulfide) has also been identified. One of the most interesting feature observed was a thin film covering the wall of the studied fluid inclusions. This film has a feature that is typical for the volcanic glasses, containing numerous spherical-shaped holes (vesicles) on the surface as a result of the exsolution of volatiles. It is to emphasize that previous works on fluid inclusions have already proposed the presence of the glass film on the wall [2] in mantle fluid inclusions, however, in this work the glass film has been found *in situ*.

The acquired results of this study contribute to 1) quantification of the bulk fluid composition and 2) better understanding the mechanisms of the post-entrapment processes in fluid inclusions entrapped at lithopheric mantle condition.

[1] Wirth (2009) *Chem Geol* **261**, 217-229. [2] Hidas *et al*. (2010) *Chem Geol* **274**, 1-18.