

## The metamorphic ages and PT paths of the HT-HP and HT-UHT granulites in North China Craton

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High-grade metamorphic rocks are extensively distributed in the North China Craton (NCC), and study on high-temperature and high-pressure granulites (HT-HP) and high-ultra-high temperature granulites (HT-UHT) is a key issue to understanding the Early Precambrian tectonic evolution. The HT-HP granulites are mainly garnet-bearing mafic granulites that are metamorphosed and deformed dykes enclosed in the orthogneisses. The HT-UHT rocks are metamorphosed pelites (khondalites), and sapphirine and spinel in khondalite indicates metamorphic temperature > 900-1000 °C. This study deals with the occurrences, distribution, metamorphic conditions and history, isotopic ages of the two granulites, and emphasizes the following aspects: (1) the peak metamorphic conditions and *PT* paths with a relief of pressure for two granulites are similar; (2) their metamorphic ages of the peak and followed decompressional stages are also similar, which are ~1930-1900 Ma and 1860-1820 Ma, respectively; (3) HT-HP and HT-UHT granulites probably occur in area distribution other than in linear distribution; (4) high-grade granulites represent the Precambrian lowermost crust. Therefore, the metamorphic geological setting and their original for the two granulites are most important in the future study.

[1] M.G. Zhai, (2008) *Acta Petrologica Sinica* **24** 2185-2204.

[2] M. Santosh *et al.* (2007) *Gond. Res.* **11** 263-285.

## Research on the organic geochemistry for Chipu Pb-Zn deposit, Sichuan, China

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### Introduction

A great deal of bitumen and lead-zinc sulfides hosted by carbonate rocks grows together in Chipu deposit. In addition, many organic fluid inclusions develop in quartz and sphalerite. So, Chipu Pb-Zn deposit have closely associated with the organic matter. Through separation of compound-grouped fractions and content determination, saturated hydrocarbons chromatogram-mass spectrum analysis of organic matter, the organic fractions and biomarker of bitumen have been researched on. In last part, we discussed the roles during mineralization and geological significance.

### Conclusions

Existence of C<sub>30</sub> sterane, low Pr/Ph, Pr/nC<sub>17</sub> and main peak of n-alkanes, indicate that organic matter source is marine sediment rather than continental deposits. It's mainly from carbonate rocks and minor from the shale. This kind of characteristics of mixed origin could be formed by different sources of ore-forming fluid.

OEP<1, C<sub>30</sub>\*/C<sub>29</sub>Ts<0.6 and high rate of gammacerane implies that organic hydrothermal fluids suffered the physical and chemical processes of high reduction and high salinity.

With similar high maturity, organic matter in sulfide and host rocks belongs to carbon bitumen with the evolution of higher level. They both underwent similar geological process.

The high methane content in fluids inclusion in sulfides inferred that high mature stage of organic matter evolution. The oil and gas reservoir maybe involved during mineralization. The sulfate in carbonate rocks can be reduced by organic matter to create reduced sulfur for lead and zinc sulfide precipitation. So, organic matter may play a role of reducing agent during meteoric water mixing with ore-bearing fluid.

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