

Isotope geochemistry of rhyolite of the Late Carboniferous in Eastern Tianshan

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Introduction

The Dashitou-Shepikou area belongs to the northern part of the eastern section of the Bogda orogen. Rhyolite of the Dashitou group gave a Rb-Sr age of 306.7 ± 2.3 Ma, and thus is suggested to have been produced at the uplifting stage following the closure of the Bogda rift.

Discussion of Result

With $\epsilon_{Nd}(t)$ of $+5.30 \sim +6.40$, $(^{87}Sr/^{86}Sr)_i$ of $0.703289 \sim 0.703496$, $(^{206}Pb/^{204}Pb)_i$ of $18.037 \sim 18.425$, $(^{207}Pb/^{204}Pb)_i$ of $15.524 \sim 15.567$ and $(^{208}Pb/^{204}Pb)_i$ of $37.198 \sim 37.810$, the rhyolite is comparable in Nd, Sr and Pb isotopes to the basalt and rhyolite of the Lower and Middle Carboniferous Qijiaoqing formation that were formed during extension and subsidence of the Bogda intra-continental rift. Minor rhyolite accompanying a large amount of basalt in the Qijiaoqing formation are thought to have been produced by fractional crystallisation of the basaltic magma, but a large quantity of rhyolite accompanied by very minor basaltic rocks can preclude the big possibility of their formation by fractional crystallisation of basaltic magma.

Conclusions

The rhyolite of the Dashitou group is likely to have been derived from an underplated basaltic body by remelting of this body in response to mantle heating. Highly positive $\epsilon_{Nd}(t)$, and negative $\epsilon_{Sr}(t)$ (low $^{87}Sr/^{86}Sr$ initial ratio), and low Pb isotope ratios suggested that, like the pre-collision basalt of the Qijiaoqing formation, the mantle magma underplated basaltic body by remelting at the post-collision stage of the Bogda rift came from depleted mantle.

[1] Gu *et al.* (2000a) *Acta Petrologica Sinica* **16**(3) 305-316.

[2] Wang *et al.* (2006) *Acta Petrologica Sinica* **22**(5) 1215-1224.

New biomarkers of lacustrine sediments in Linxia Basin and their climate significance

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New Biomarkers in Lacustrine Sediments

The A-C series compounds of branched aliphatic alkanes with quaternary substituted carbon atom (BAQCs) have been detected for the first time in the lacustrine sediments of Maogou section in the Linxia Basin from the northeastern edge of the Tibetan Plateau. The homologous series of A-C are identified as 5,5-diethylalkanes, 6,6-diethylalkanes and 5-butyl, 5-ethylalkanes series.

Discussion of Results

In this section, deposition began at ~ 29 Ma through 4.3 Ma, the series A and C exhibit an odd carbon number predominance, while the series B show an even carbon number predominance. The high values of series A correspondence to the high values of series B and C, it can be concluded that all the series A, B and C have a common source. According to the distribution characteristics of these biomarkers in study section, we suggest that the biogenic source of series A-C may be derived from some kinds of bacteria or algae that most likely live in weak oxic-anoxic and moisture-heat environments. The characteristics are similar to results in marine sediments [1]. Based on the distributions of these biomarkers in different climatic regions we suggest that they record information related to climate change.

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[1] Greenword *et al.* (2004) *Org. Geochem.* **35**, 331-346.