

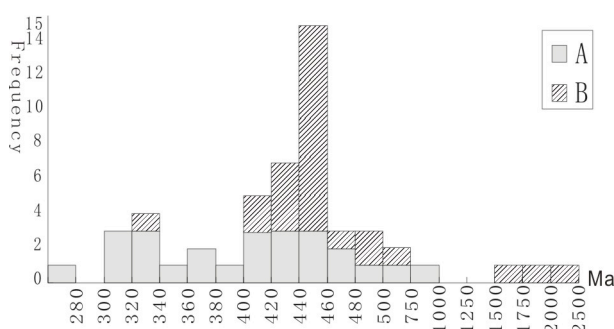
The characteristics of metamorphic basement for the Bogda late Paleozoic rift through, eastern Tianshan mountains, China

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East tianshan mountains bogda rift trough located in the binding site between junggar and turpan-hami precambrian blocks, the tectonic setting is an upper paleozoic continental rift zone. Detrital zircon dating of newly discovered on the bogda orogenic north rim tectonic quartz schist shows that two sampling points apart 20 meters reflects a remarkable difference about the origin and the reformation of the metamorphic basement. The rifting from the early carboniferous, the deposition is characterized by a set of basalt and rhyolite bimodal volcanic and clastic rocks; the late carboniferous rift closed. Magmatism occurred in the tensional environment.

A sampling point on 25 zircon LA-ICP MS U-pb age analysis showed that the sample material composition, source formed in a wide range of geological time (figure 1, A sample data). B sampling point 30 zircon LA-ICP MS U-pb age analysis shows that 22 zircon of which given the relative concentration of the age of information, the weighted age of 450.3 ± 4.3 (MSWD=1.7). Batch of these zircon was short columnar or long columnar euhedral, the subhedral structure, with zircon shock rings clear, which indicate the source mass came from the magmatic, and the metamorphic protolith main diagenetic's late cambrian; sampled twice by a total of six zircon older than 540 million years, and the distribution of dating was scattered. Batch of these zircon was rounded, the weaker reflected light intensity, indicating that the metamorphic protolith old crystalline basement (fig. 1 B sample data).



Analysis of characteristics on different components of hydrocarbons in organo-clay complexes

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To investigate the characteristics of hydrocarbons with different occurrence states in clay minerals, samples of clay fraction ($<2\mu\text{m}$) were separated from argillaceous source rocks in Palaeogene of Dongying Sag in Jiyang Depression. The clay fractions were sequentially treated with Soxhlet extraction, alkaline hydrolysis, acid hydrolysis and mixed acid (10% HF and 10% HCl) processing, then the quantitative detection of GC-MS was employed to the organic components. The results show that there were great variations in the contents and the composition distribution characteristics of hydrocarbons with different treatments, a) the content of free hydrocarbons obtained by Soxhlet extraction was maximum ($603.74\mu\text{g/g}$), while the second part was the hydrocarbons obtained by mixed acid processing, and the hydrocarbons from alkaline and acid hydrolysis were the least part ($23.51\mu\text{g/g}$, $12.73\mu\text{g/g}$, respectively); b) the free hydrocarbons from Soxhlet extraction were mainly consisted of heavy components (C_{15}^+), ranged 52%~94%, 80% on average; and the hydrocarbons from alkaline and acid treatments were chiefly composed of light components ($\text{C}_1\text{-C}_{14}$), mainly ranged $\text{C}_7\text{-C}_{11}$, and the contents of light components were 73%, 77%, 65%, respectively. Through the contrastive analysis on the content of hydrocarbons in different burial depth, it can be found that the hydrocarbons were dominated with light components above 2000m, with the content more than 70%, and were dominated with heavy components below 2000m, with the content much more than 70%.

The organo-clay complexes are the main carrier of organic matter and hydrocarbons in argillaceous source rocks. It is of great significance to study the geochemical characteristics of petroleum based on different treatments in clay fractions for the migration study of petroleum and the resource evaluation of unconventional petroleum.

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