Research on Organic Geochemistry Characteristics of Hydrocarbon Generation Conditions of Meso-Neoproterozoic in the North China Platform

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At present, primary oil and gas reservoirs of the Meso-Neoproterozoic have been reported in Eastern Siberia, Africa, Eastern Europe, India, Arabia Australia, et al. The proven and exploitable hydrocarbon resource is especially large in Eastern Siberia and Omen[1]. With the development of exploration technology and equipment, deep oil and gas resources have gotten the attention of world geologists. Whether there are abundant oil and gas resources in the Meso-Neoproterozoic of the North China platform is an important theme. Therefore, this article systematically studied the organic geochemistry characteristics of hydrocarbon generation conditions between the east and the west of Meso-Neoproterozoic in North China Platform, analyzing the abundance, the type and the thermal evolution degree of organic matter in depth.

Jiliao Aulacogen is the eastern study area, which is the major sedimentary province in the east of the North China Platform; and Inner Mengshan Aulacogen is the western study area, in which abundant hydrocarbon resources of Paleozoic and Mesozoic strata have been exploided. Jiliao Aulacogen and Inner Mengshan Aulacogen formed in the Meso-Neoproterozoic in the North China Platform.

Experiments, such as total organic carbon analysis, SEM analysis , organic maceral analysis and rock pyrolysis, were did with more than 200 samples. Then, the abundance, the type and the thermal evolution degree of organic matter between the east and the west of Meso-Neoproterozoic in North China Platform were compared.

The research has shown that the hydrocarbon source rocks of Meso-Neoproterozoic in the eastern part of North China platform is premium source rocks for high abundance and good type of organic matter; western hydrocarbon source rocks with lower abundance of organic matter are poor sorce rocks, even though the type of organic matter is also good. Although the thermal evolution degree of the eastern part of North China platform is similar to the western part, their thermal evolutions processes are quite different.

Generally speaking, the hydrocarbon-generating potential of the eastern part of the North China platform is larger than the western part according to the analysis of the organic geochemistry characteristics of source rocks. And this research can provide certain guidance and suggestion for the Meso-Neoproterozoic exploration of the North China platform.

[1] Wang Tie-guan, Han Ke-you. On Meso-Neoproterozoic primary petroleum resources[J].Acta Petrolei Sinica, 2011,32（1）：1-7.