The Relations of Organic Matter and Uranium Mineralization in Black Rock Series Uranium Deposit

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Carbonaceous siliceous pelitic rock type uranium deposit(CSPRTUD), one of the most important uranium deposit type in China, occurs in carbonate, silica, clay, fine clastic rocks and their transitional rock. It is also called black rock series uranium deposit. In the world, CSPRTUD is known as black shale uranium deposit. Black rock series contains a large amount of organic matter and metal elements. The relations of organic matter and uranium mineralization in CSPRTUD is studied in this paper.

The type and maturity of organic matter are studied in black rock series(taking 373 uranium deposit in Guangxi, China as an example). Meanwhile, U geochemical characteristic are revealed. The chloroform bitumen "A" components fall in Ⅱ B area ,so the type of organic matter is mixed type bias to the humic type. The maturity of organic matter is relatively low on the basis of Tmax,at the immature-low mature stage. The type and the maturity of organic matter result in the generation of large amount of humic acid during thermal evolution that could be preserved in strata.

The role of organic matter in uranium mineralization process is studied. The parameter S_0,S_1,S_2 are getted by pyrolysis analysis. These samples from different place have a similar growth on basis of the line chart of S_0,S_1,S_2. In normal conditions the samples from different stratas have different properties. This is the reason that the different stratas have been eroded by a large-scale hydrothermal. The active thermal fluid between different stratas is resulted in the similar properties of the samples. It has a very positive meaning for the uranium mineralization. The contents of chloroform bitumen “A” of organic matter in the mineralized layer are 0.47~10.42μg/g, and asphaltene is the main component of chloroform bitumen “A”. It is high correlation between chloroform bitumen “A” and uranium content，as well as the high correlation between the content of asphaltene and uranium content. Comprehensive study shows that the functions of organic matter in CSPRTUD are mainly adsorption, complexation and reduction.

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