

Characteristics of Chlorite from the Nalinggou Uranium Deposit in the Ordos Basin and Its Geological Significance

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Introduction:The Nalinggou uranium deposit, located in the northern Ordos Basin in northern Central China, is among the largest deposits of this type in China. It occurs in the sandstones of the Middle Jurassic Zhiluo Formation. The Nalinggou uranium deposit has obvious late hydrothermal features. Spatial distribution of the ore body is mainly controlled by the green-gray sandstone transition interface, and closely associated with chloritization of alteration sandstone. So, what is the relationship between chlorite and uranium mineralization?

Results:Detailed petrographic and electron microprobe chemical analysis was conducted to chlorite from the Nalinggou uranium deposit. Based on the relationship between chlorite genesis and paragenesis minerals, three types of chlorite have been identified: Filling-type chlorite, flakes chlorite intergrowth with pyrite and chlorite altered from biotite. Fe-Si diagram of chlorite determines that chlorite in different color sandstones can be divided into two types: brunsvigite and pychochlorite (Fig.1).

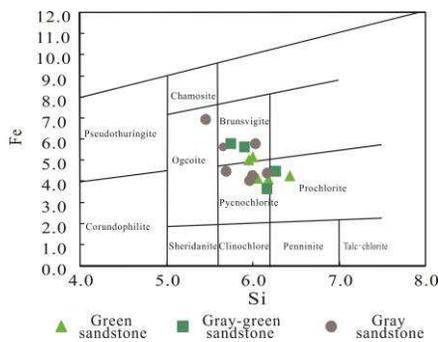


Fig.1 The classification of chlorite in Nalinggou uranium deposit

Discussions:Comprehensive studies have shown that chlorite in Nalinggou uranium deposits experienced at least two fluid activities, a slightly high temperature reducing fluid activity and a slightly low temperature oxidizing fluids activity. It can be concluded that they were closely related uranium mineralization, and the former played an important role in mineralization.