

Characteristic and the formation conditions of chlorite in Xiazhuang uranium ore-field, South China

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Xiazhuang uranium ore-field was one of the most important granite-type uranium deposits in China. Chloritization was one of the most important alteration types in Xiazhuang uranium-ore field. So the study on the characteristics included the paragenetic association and the formation conditions would be helpfully to understanding the mineralization of the Uranium in this field. Therefore this paper we focused on the characteristic and the formation conditions of chlorite in Xiazhuang Uranium ore-field by using microscope and electron probe microanalyser (EPMA) methods.

There were three types of chlorite in Xiazhuang uranium ore-field. First type chlorite were the secondary product of biotite or feldspar which usually displayed in the false pattern of biotite or very fine flaky, we named it was I-type chlorite; the second type chlorite had the paragenetic association with pitchblende or rutile which shown there might had close relationships with the mineralization of uranium and most of them shaped irregularly, third type chlorite often displayed in vein and shaped in worm or flaky, we combined the second and third type into II-type chlorite. In Fe/Si diagram which mostly used for classify and nominate of the chlorite since it been used by Foster [1], I-type chlorite located in the ferroamesite and aphrosiderite region, most II-type located in the same region but few of them distribute in pycnochlorite and diabantite region, which shown the later type had lesser iron and richer silicon. The formation temperature of chlorite varied in 179 ~ 276°C, and mainly ranged in 230 ~ 260°C calculated by the empirical equation which be presented by Battaglia [2].

Cation /Mg diagrams show that Al^{VI} and Fe had a good linear relation with Mg, but not so good between Si and Al^{IV} with Mg, so do the Al^{IV} with n(Fe)/n(Mg+Fe) and Al^{IV} with n(Mg)/n(Mg+Fe), that might suggested that the chlorite were formatted in multi-geological process. Due to most chlorite had the nAl/n(Al+Mg+Fe) value bigger than 0.35 that suggested that most of the chlorite were derived from argillaceous rock and be formatted in the reduced condition, those Mg enriched chlorite might formatted more lower f_{O2} and pH conditions.

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[1] Foster (1962) *US Geology Survey Prof. Paper* **414A**, 33

[2] Battaglia (1999) *Clays & Clay Minerals* **47**(1) 54-63.

Metallogenic setting of the Dabate Copper–Molybdenum deposit in the Western Tianshan Mountains, NW China

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The Dabate porphyry Cu (Mo) deposit is a typical porphyry copper molybdenum deposit in the Alatao-Keguqin copper polymetallic mineralization belt which comprises porphyry-skarn copper and porphyry copper deposits in west Tianshan. The copper deposit is temporal and spatial related with Mid-Hercynian hypabyssal acid intrusive rock hosted in Upper Devonian tuffaceous breccia and lava of the Tuosikuertawu Formation. In the southeast part of the district, there outcropped Hercynian dacitic porphyry. The ore related intrusion comprise of granite-porphyry and rhyolitic porphyry. The ore bodies are distributed along the contact zone of the intrusion and the wall rocks.

The SHRIMP zircon U-Pb age of dacitic porphyry which developed in the southeast of the deposit is 315.9±5.9Ma, and the SHRIMP zircon U-Pb age of granite-porphyry is 278.7±5.7Ma. The result of Re-Os dating of molybdenite from the vein ores is 301±20Ma. According to these dating results, combining with regional geological evolution, it may be concluded that the dacite porphyry formed in the Biezhentao-Keguqin late Paleozoic inland arc and it is originated from the subduction of Carboniferous Bayingou oceanic crust to south to Sailim-Boluokenu lift, while the mineralization ages may be early Permian and formed during the extension of intraplate and the related magmatic activities were simultaneous with the porphyry mineralization.

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