Atomic structure at the quartz (101) – water interface by X-ray scattering method

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Knowledge of the atomic level structures at the quartz water inteface will be essential to understand the dissolution/precipitation processes at such interface. In a previous study [1], the interfacial structure of quartz (101) and (100) surface in water was probed along the surface normal direction. In this study, the single crystal quartz (101) – deionized water interface structure was measured with high resolution surface X-ray scattering (i.e. crystal truncation rod). The 3D interfacial structure, including the relaxations of the atoms in the near surface region and the distribution of the interfacial water molecules, were determined. This is the first step in determining the interfacial structure during the dissolution/precipitation processes when the quartz surface is exposed to aqueous solutions at various conditions.

[1] Schlegel, M.L. *et al*. (2002) *Geochimica Cosmochimica Acta*, **66**, 3037–3054.

Characteristic of tourmaline in Xiazhuang Uranium ore-field, South China

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Tourmaline is a common accessory mineral in many igneous and metamorphic rocks. Xiazhuang uranium ore-field was one of the most important granite-type uranium deposits in China. Previous studied revealed that tourmaline was one of the most important alteration minerals with the mineralization of uranium [1]. 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 tourmaline in Xiazhuang Uranium ore-field by using microscope and electron probe microanalyser (EPMA) methods.

There were two kinds occurrence of tourmalines in Xiazhuang uranium ore-field. One kinds of tourmaline occurrence in tourmaline-quartz vein, tourmaline often radiated or lumped distributed in quartz vein and some of grains size reached 3 cm, pitchblende was distributed at the astillen of this kind of vein by exploitation. The other kind of tourmaline dispersed in tourmalinization granite or Maofeng Pluto, which was one of the most important host granite pluto in Xiazhuang uranium ore-field.

EPMA analysis revealed that all the tourmalines were lack of the interior girdle and the composition of the tourmaline were located in the schorl areas. In the distinguish diagram between the composition of tourmaline and formation environment, which used by Henry & Guidotti [2], most of the tourmaline located in the granite genesis, few of them located in the quartz-tourmaline and metamorphose mudstone zone. Most of the tourmaline has the same REE pattern with the host granite; but some of them especially those occurrences in quartz vein differ from the granite type, and lack of the Europium-depletion, which might infer that the REE in tourmaline were not derive from granite. Due to the tourmalines in Xiazhuang uranium ore-field had different attitude and similar chemical composition but varied REE pattern and lack of interior girdle which might infer that tourmaline not the product of the autometamorphism but the products of the B-riched fluid.

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[1] Du L.T. (2001) Atomic Energy Press, pp.1–307. [2] Henry & Guidotti (1985) *American Mineralogist* **70**, 1–15.