Pb isotope determination of the Hukeng tungsten deposit, Jiangxi Province, South China

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Hukeng tungsten deposit, located in Wugongshan metallogenic belt in central part of Jiangxi Province, South China, is one large scale quartz vein type wolframite deposit, which is in the south margin of Hukeng granite intrusion, covering the area of 6 km^2. The deposit can be divided into quartz-wolframite, quartz-fluorite-wolframite and quartz-pyrite-sphalerite-wolframite three metallogenic stages.

The homogenization temperatures of fluid inclusions from quartz in three metallogenic stages vary from 200 to 300°C, with peak values between 220 and 240°C. And Re-Os dating of molybdenite minerals in three metallogenic stages yielded isochron age of 150.2±2.2 Ma and weighted average model age of 149.82 ±0.92 Ma, indicating the Hukeng tungsten deposit formed in about 150 Ma and was the product during the explosive period of large scale petrogenesis and metallogenesis in Mesozoic in South China.

Pb isotopic compositions of pyrites and sphalerites from three metallogenic stages have been determined. $^{206}Pb/^{204}Pb$, $^{207}Pb/^{204}Pb$ and $^{208}Pb/^{204}Pb$ ratios vary from 18.3850 to 18.3181, 15.7233 to 15.6859 and 38.8667 to 38.7505, respectively. Pb isotopic compositions of the sulfides in the Hukeng tungsten deposit show certain variation and plot near the upper crust evolution curve in Zartman's Pb diagram, suggesting that Pb source mainly from the crust for this deposit. The Pb isotopic compositions of the deposit are significantly higher than those for Huekng granite intrusion. Combined with the spatial relation between the Hukeng tungsten deposit and the Hukeng granite intrusion, we suggest the genesis of the deposit is closely associated with Hukeng granite intrusion, which provided the energy and media but was not the only main material source for the deposit.

This research was financially supported by the National Key Basic Science Research Project of China (973 Program, 2007CB411407).

Determination of trace B element in sedimentary rock samples by Inductively Coupled Plasma Mass Spectrometry

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B elment is the key elment in sedimentary, it can indicate the sedimentation settings.so it is important to exactly determining B. In the past, it only deteminate buy ICP-AES or AAS.but this instrmnents detection limit are hight comparatively content in sedimentary. Iductively Coupled Plasma Mass Spectrometry (ICP-MS) have low comparatively, it is the right detemination instrument.

A method for the determination of B element in sedimentary rock was proposed by Iductively Coupled Plasma Mass Spectrometry (ICP-MS). The ICPa-MS (Agilent 7500a) running conditions: RF power 1350W; Carrier gas flow rate 1.2L/min; Spray chamber temp 2°C; Sample flow rate 0.1ml/min; Sample depth 7mm.

In the determination of the method, we analyse B element.The sample was dissolved in mixed acids with pressurized sample digestion and an appropriate amount of mannnitol was added to prevent boron from volatilization. Analytical mass number were carefully selected and the instrumental operating conditionswere optimized.Thedetection limits of the method for the elements were 0.0001-0.003mg/L. The method has been applied to the determination of these elements in National Standard Reference Materials including GBW 07105-GBW 07108. The results obtained were in agreement with the certified values with recovery of 90.3%-112% and precision of less than 5% RSD(n=3).

So this technique has a lot of advantages,such as high accuracy and precision, low limit,and high analytic speed,etc.We draw a conclusion that using ICP-MS,we can get satisfactory results.

[1] Mihaljevic, Strnad & Sebek (2004) *Chemicke Listy* **98** (3).
[2] Beauchemin (2008) *Analytical Chemistry* **80** (12).