Rb-Sr dating of the Wangpingxigou Pb-Zn deposit, China

JUN-MING YAO[1]*, YAN-JING CHEN[1,2], TAI-PING ZHAO[1] AND XIANG-HUI LI[3]

[1]Key Laboratory of Mineralogy and Metallogeny, Guangzhou Institute of Geochemistry, CAS, Guangzhou 510640, China (yaojunming@gig.ac.cn)

[2]Key Laboratory of Orogen and Crust Evolution, PKU, Beijing 100871, China (yjchen@pku.edu.cn)

[3]Laboratory for Radiogenic Isotope Geochemistry, Institute of Geology and Geophysics, CAS, Beijing 100029, China

Unlike their big brothers, SEDEX and MVT types of Pb-Zn ore deposits which are distinguished for their large reserves and stable occurrence and have long been the focus of scientific research and industrial exploration, vein-type Pb-Zn deposits are often ignored for the small scales and diverse occurrence. However, in the last few years, numerous vein-type Pb-Zn deposits have been discovered in the East Qinling orogenic belt, which include several large to super-large Pb-Zn ore deposits, such as Wangpingxigou, Tieluping and Lengshuibeigou etc. These vein-type Pb-Zn deposits possess important economic value and huge exploration potentials.

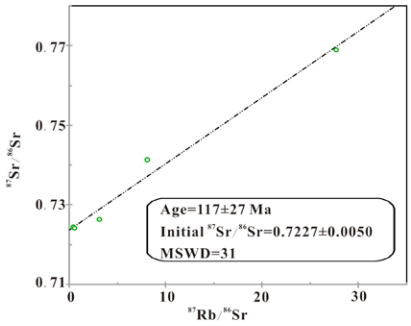

Figure 1: The Rb-Sr isochron age of single-grain sphalerite from Wangpingxigou Pb-Zn deposit, Henan province.

The single-grain Rb-Sr analytical technique was employed on sphalerite to date the Pb-Zn mineralization of the Wangpingxigou deposit. Five sphalerite grains from sulfide ores yield an Rb-Sr isochron age of 117 ± 27 Ma with the initial 87Rb/86Sr value of 0.7227 ± 0.0050 (Figure 1), significantly higher than those of Yanshanian intermediate-felsic porphyries and granite plutons. This age agrees with the Re-Os model age (116 ± 1.7 Ma) of Donggou Mo deposit located in Waifangshan district. This suggests that the Mo-Au polymetallic deposits in Waifangshan area were formed in the same period.

Quantitative research on nanopores of coal using atomic force microscope

SUPING YAO*, KUN JIAO AND MIAOCHUN LI

State Key Laboratory for Mineral Deposits Research (Nanjing University), School of Earth Sciences and Engineering, Nanjing University, Nanjing 210093, China (*correspondence: spyao@nju.edu.cn)

Atomic Force Microscope (AFM) is a new approach to nanopore structure study and porosity measuring by observing the nanopores of coal directly and processing the quantitative measurement of pore structure parameter.

AFM could study the surface nature of samples under contact mode using several methods. The section analysis could characterize the nanopore geometry, the grain analysis could study the nanopore distribution of coal, and the parameters got from bearing analysis are important in porosity measurement. A large amount of nanopores with different shapes shows in anthracite (Sample QS), the section analysis shows that the diameter and the depth of the largest pore in the analized area is 354.4nm and 13.5nm respectively, while those of the smallest pore is 33.2nm and 1.6nm respectively. The statistic data of scanning area (Table.1) implies that the number of pores in anthracite is 5 times more than gas coal, the Pore Area / Total Area ratio of anthracite is also higher. However, the average pore size of anthracite is abviously smaller than gas coal. The hydrocabon generation process of coal with the increase of coalification degree (maturity) could account for the increase of pore size.

The high resolution imaging and quantitative analysis of advantage of AFM could be utilized to pore structure reasearch, quantitative pore size analysis and porosimetry, which could help to understand the nanopore generation, pore geometry and adsorption mechanism.

Sample	Ro (%)	Pore Acount (/mm^2)	Average Pore Size (nm^2)	Total Pore Area (μm^2)	Pore/ Total Area (%)
Spm	0.67	5.33×10^5	71816	1915	3.83
CX	0.72	5.55×10^5	74829	2090	4.18
QS	2.47	2.57×10^6	23871	3075	6.15
SX	4.34	3.32×10^6	19441	3230	6.46

Table 1 Quantitative analysis data of coal (scanning area 50000 μm^2)