Research on the source of ore-forming fluid of Sanqisan uranium deposit, Guangxi, China

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Sanqisan uranium deposit is located in thewest Damingshan salient(II_2^5) of Youjiang fold system(II_2) in Nanhua activity, South China(Ⅱ), Daxin concave broken beams, the northern end of the Naling-Fengtun fold broken horst. The formation of Mine is mainly Cambrian ,Lower Devonian and Middle Devonian make for eastwest direction, lean to north.F_2 fault is the biggest fault within the mining area,whose strikeis near eastwest and dip is north.F_3^1, F_3^2, F_3^3 faults are a series of branch faults produced by the hanging wall of F_2.Ore mainly occur in F_3^1, F_3^2, F_3^3 faults .

Geological evidence for source of ore-forming fluid:1) Many silica bodies were discovered in fieldwith high content of uranium. 2)It can indicate that there was magmatism (or volcanic activity) in the study eara and the scale was large of the ore-bearing structure with stronge activity. 3)Multi-stages hydrothermal activity. 4)Diabase dikes near mine had significant relationship with uranium mineralization.

Geochemical evidence for the source of ore-forming fluids:U coexist with Mo, Mo, Ni, V, As, Sb, Cu, Co had different levels of positive correlationwith U in Sanqisan uranium mining. Zr is high field strength elements in magmatism and Cr, Co is typical mantle elements , reflecting the ore-forming fluids have deep source of calcite. $\delta^{13}C$ is less than -3 ‰ in calcite of mineralization stage, revealing the ore-forming fluids have deep sources. So the source of ore-forming fluid scame from meteoric water and deep hydrothermal.

Combining geology and geochemistry characteristics, there is significant evidence of hydrothermal activity in Sanqisan uranium deposit, ore-forming fluid is a mixture sources of meteoric water and deep hydrothermal fluids.The famation of Sanqisan uranium deposit is mainly sedimentary-epigenetic modification, combining with later hydrothermal superimpo sedmineralization.

Acknowledgements: This work was supported financially by the National Natural Scientific Foundation of China (Grants No.41173059).