The origin and Sulphur characteristics of Early Cambrian barite deposits in East Guizhou, China

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Geological Setting

The Lower Cambrian black shale sequence of the Niutitang Formation in southeast Guizhou China hosts a barite layer. The ore-bearing rock series is composed of black silicalite, carbonaceous shale interbedded with phosphorite, barite and carbonaceous shale in ascending sequence. The stratified main ore bodies, partially in lenticular form, are dominantly embodied in the silicalite and black shale of the lower section of the Niutitang Fm. of the early Cambrian.

Discussion of Results

Systematic samplings for the analysis of sulphur by isotope mass spectrometry were taken in the Dahebian barite deposit in Tianzhu County of Guizhou Province China. Samples of barite ore were analyzed using MAT-253 in the Key Laboratory for Nuclear Resources and Environmental Research of Ministry of Education, East China Institute of Technology.

Based on the analysis of sulphur by isotope mass spectrometry, the sulphur characteristics were reported for the barite deposits (Table 1). The study provides sulphur isotopic evidence for the submarine hydrothermal exhalative genesis of Dahebian and Xinhuan barite deposits.

Sample No	DHB-4	DHB-5	DHB-6	DHB-7	GT-4	GT-6	GT-8	GT-10	TZ-12	TZ-27
□34S□‰□	40.85	37.27	36.73	39.10	41.43	40.94	41.5	40.90	33.86	40.89

Table 1: The sulphur characteristics in Dahebian and Xinhuan barite deposits ($\delta^{34}S$ (‰)).

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Geochemistry and petrogenesis of Hulu Ni–Cu-bearing mafic-ultramafic intrusions, Eastern Xinjiang, Northwest China

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The Hulu intrusions is one of the typical magmatic Cu-Ni deposits related to mafic-ultramafic magmatism, in Jueluotage orogenic belt, the eastern of Xinjiang, China. The intrusions consist of diorites, gabbro-diorites, pyroxenite, olivine pyroxenite, hornblendite peridotite. They are enriched in light rare earth elements ((La/Yb) n=2.02-3.08) and LIL elements (Rb, Ba, Th, U) and depleted in high field strength elements (Nb, Ta Ti), with a weak Eu (δEu=0.8~1.3) anomaly. Similar REE patterns indicate that they are the product of fractionation from the same primary magma. Petrography, lithogeochemistry and crystal chemistry of petrogenetic minerals suggest they experienced fractional crystallization of olivine, clinopyroxene, orthopyroxene, plagioclase .The rocks exhibit εNd values (+ 5.3 to + 6.0), $^{87}Sr/^{86}Sr$ values (0.704062 to0.704893), and Pb isotopic compositions(206Pb/204Pb= 18.09-18.51; $^{207}Pb/^{204}Pb$ = 15.46-15.53; $^{208}Pb/^{204}Pb$= 37.53-38.13). These geochemical characteristics suggest they have been derived from a depleted asthenospheric mantle source that was previously contaminated by subduction of oceanic crust .Therefore, contamination by a small amount of subducted-related components and fractional crystallization play an important role in the Ni–Cu-(PGE) mineralization.

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