

SULFUR ISOTOPE COMPOSITION OF MAJOR SULFIDE ORE MINERALS IN ERDENETIIN OVOO Cu-Mo PORPHYRY DEPOSIT, NORTHERN MONGOLIA

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The Erdenetiin Ovoo Copper and molybdenum deposit is located in the Erdenet city of the central part of Orkhon province. Some rock samples were collected in the Northwestern part of deposit, consisting of granodiorite, diorite porphyry and granodiorite porphyry complexes. In most samples, quartz, sericite, plagioclase and K-feldspar are observed with pervasive quartz-sericite alteration. Identified major sulfide ore minerals in macro-scope observation are pyrite, chalcopyrite and molybdenite. These major ore minerals are occurring in quartz veins or disseminated within the host rocks. Under macro- and micro-scope observation, chalcocite, sphalerite and chrysocolla occur as well.

To study the origin and formation process of sulfide ore minerals, sulfur isotope composition (^{32}S and ^{34}S) of pyrite, chalcopyrite and molybdenite collected from quartz vein and host rocks were analyzed by EA-CF-IRMS (Elemental Analyzer-Continuous Flow-Isotope Ratio Mass Spectrometer). The $\delta^{34}\text{S}$ values of pyrite range from -0.2 ‰ to 1.2 ‰, chalcopyrite from -0.6 ‰ to 0.1 ‰ and molybdenite from -0.3 ‰ to 0.5 ‰. No significant differences of sulfur isotope values are observed among sulfide minerals. The range of these values are near 0 ‰ and indicate that sulfur of sulfide minerals were derived from deep source. Sulfur isotope composition of hydrothermal fluid in the deposit seems to well preserve the magmatic signature of sulfur.