

The study of rhenium occurrence in molybdenite and effect of hypogene and supergene fluids on its redistribution in porphyry systems

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Abstract: Molybdenite is the major source of Re in the Earth's crust. Mineralogical data, chemical analyses and scanning electron microscopy techniques have been used in this study to document Re behavior in molybdenite, affected by hypogene and near-surface processes. XRD study of molybdenite samples indicate that the molybdenites are of the 2H polytype. The patterns of rhenium distribution in molybdenite grains provide clear evidence on rhenium precipitation that is syngenetic with molybdenite during the growth of the molybdenite grain. Late-stage hydrothermal fluids can remove Re from molybdenite in the hypogene environment. Re loss in molybdenite can occur in fluids associated with argillic alteration, at temperature as low as 100°C. Molybdenites in the supergene zone were Re-depleted relative to samples in the hypogene zone.

Keywords: *distribution; Rhenium; porphyry system; molybdenite.*

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