

The Ilkwang stock, hydrothermal fluids, and Cu-W breccia-pipe deposit, South Korea

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A small granodiorite-quartz monzonitic stock (the Ilkwang stock) hosts a Cu-W breccia-pipe deposit containing phyllic and propylitic alterations in the southeastern Kyongsang Basin, South Korea. An assemblage of quartz, sulfide minerals and calcite from the magmatic and boiling fluids were precipitated and cemented fragments of brecciated granitic rocks. Four groups of aqueous fluid inclusions responsible for brecciation, alteration of the host rocks, precipitation of ore minerals are identified. Sulfide minerals were precipitated at 493-343°C and 450-120 bars. The fluid inclusion data are comparable with those from breccia-pipe deposits of porphyry-copper system. Unlike most other uneconomic granitic rocks in the basin, the Ilkwang Cu-W deposit exhibits breccia pipe-type fracturing indicating a successful competition of hydrostatic pressure induced by exsolving water inside of the crystallizing magma. The fluid inclusion data suggest that fluids of the deposit are deep-seated metamorphic or magmatic fluids, suggesting fluids of dominantly hypogene.