

Wall-rock Alterations Associated With Gold Mineralization In The Archaean Hutti-Maski Schist Belt, South India.

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The Hutti-Maski Schist Belt is situated in the Dharwar craton, which is an important gold producing Archaean greenstone belt. The succession consists of volcano-sedimentary rocks where tholeiitic Fe-Mg rich mafic volcanics dominate and have been affected by greenschist to amphibolite facies. The mesothermal gold mineralization occurs in an elongated brittle-ductile shear zone. Sericitisation, sulfidisation, chloritisation, together with varying degrees of carbonatisation denote hydrothermal alteration in the shear zones. The veinlets and fractures are filled with variable amounts of quartz, chlorite, albite, carbonate, sericite and sulfides, which are particularly abundant in the zones having high gold contents.

Mass balance calculations at Hutti show enrichment of As, K, Rb and W and depletion of Na and Ca which is typical of lode type gold mineralization. Sulfur was added from hydrothermal fluid reacted with the oxide to precipitate as iron-sulfide along with gains in Au, As, W and Sb. The alteration assemblages incorporated with fluid inclusion data indicate that the ore fluids at Hutti comprised of H_2O-CO_2 fluids of low salinity and near neutral pH homogenized at $300 - 350^\circ C$. Calculations showed sericitisation is a pervasive feature and the zone is typically exhibited by strong enrichment of LREE. The gold deposits exhibit strong lateral zonation of alteration phases from proximal to distal assemblages on scale of meters. The alteration pattern from the margins to the core of the gold lodes can be listed as chloritisation-propylitisation - carbonatisation - albitisation - sericitisation - sulfidisation. Carbonatisation, sericitisation and sulfidisation are common and pervasive throughout Hutti-Maski Schist Belt, which may serve as promising ore guides.