

Biom mineralization of gold: myth versus reality

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Traditionally, experts well versed in experimentation, maintained that gold was so noble as to be virtually insoluble. However, popular wisdom has long held otherwise. Results of selected experimental work on the biom mineralization of gold are reviewed against the background of historical accounts. The ability to bind metals is an integral characteristic of most micro-organisms. They thrive under diverse geochemical conditions and a tremendous variety of habitats, wherever there is liquid water, and up to temperatures of about 120°C. Their versatility and wide ranging occurrence has generated various ore deposits throughout geologic time. Prokaryotes play a particularly important role in the genesis of placer gold deposits. Under various experimental conditions, widely encoun-

tered in nature, micro-organisms (especially bacteria) are able to: dissolve gold, immobilize gold in colloidal condition, and catalyze the formation of crystalline gold.

Whether micro-organism, or a higher or lower plant, the role of photosynthesis in life and growth processes is therefore implicit and of paramount importance in biom mineralization. In the case of gold, the link to chemical reactions driven by photosynthesis is clear. The intrinsic ability of certain plants, and of micro-organisms generally, to bind metals, functions in diverse ways to dissolve, immobilize, transport, or precipitate gold under a wide range of geological conditions, and in exceptional cases, to form ore deposits.