Journal of Applied Geochemistry
Vol. 22, No. 3 (2020). pp. 177-191

GEOLOGY AND GOLD MINERALIZATION IN THE WADI ONIB AREA, RED SEA HILLS, SUDAN

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Abstract

Gold mineralization of Neo-Proterozoic age in the Arabian- Nubian Shield occurring in the Red Sea Hills area in Sudan, North Africa, is controlledby NE-SW and NW-SE trending regional shears. Gold mining in this region appears to be as old as the XX[th] Century Egyptian Dynasties of the Middle Kingdom. The present study area in Wadi Onib in the north- east Red Sea Hills region of Sudan encloses potential auriferous zones along the first and second-generation shears. Gold is commercially extracted by several local and multi-national mining companies.

The Onib – Sol Hamed suture zone comprising the Gerf and Gebeitterranes is one such structurally identified area with an Ophiolite Complex extending along a NE-SW trend. A few oldworkings of gold are reported in the southern end of this zone. The gold occurrence along the NE-SW shear(S-1) is hosted by quartz veins intruding and altering the wall rocks in metavolcanics and pyritiferous phyllites. Gold mineralization is observed over a strike length of about 500 m with 25 m width. Another occurrence associated with smoky quartz veins intruding diorite and meta-andesite and the resulting altered wall rocks is identified along the WNW-ESE fracture trend(S-2) extending over a zone of 1500 m X 30 m. Gold values in the analyzed samples range from 0.005 to 8 ppm with spike values of 40 and 65 ppm. Higher concentration of gold is observed in fractured smoky quartz veins. In the present study, an attempt is made to describe the nature of gold mineralization at these two locations associated with quartz veins and related wall-rock alteration zones along the NE-SW shear and WNW-ESE fractures.

Keywords: Gold, occurrence and mineralization, Wadi Onib, Red Sea Hills, Sudan