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ABSTRACT

Gold occurrences in the Eastern Desert of Egypt are classified as vein type deposits. The veins are almost bound to shear zones cut through pre-existing ophiolite slaps intercalated with island arc volcanics metamorphosed in greenschist - amphibolite facies and intruded by post tectonic granites. Field observations on gold bearing rocks, supported with petrographic investigations of native gold and associating sulfides make possible to construct a metallotect model for the gold mineralization in the Eastern Desert. The formation of gold depends on four main factors, these are: 1) the accretion of the pre-existing mafic and ultramafic rocks (ophiolites and volcanic arc assemblages), thrusted and metamorphosed in greenschist facies, 2) the north west Najd shear zones cut through the thrusted rock assemblages , 3) plutonism and the formation of leucogranite intruded the pre-existing rocks which provided the system with geothermal vent and acted as heat source scavenger of metals together with Au and Ag, from its original protore, 4) shearing and veining stage resulted in the formation of the epithermal quartz veins and sulfidation of the base metals together with gold formation. Ore microscopic examinations of the free mill gold and refract gold associating sulfides of the wallrock and quartz veins and veinlets revealed a remarkable relationship between gold mineralization and alteration processes of the host rocks. A lateral diffusion model is proposed to illustrate the conjunction of shearing and metamorphism considered to generate chemical potential gradients that drove ore – forming constituents from contiguous rocks into the brittle dilatants shear zones.