GEOLOGICAL AND GEOCHEMICAL CHARACTERISTICS OF GOLD MINERALIZATION AT MUTTHEIN-HECHEIN-LE U AREA, BANMAUK, NORTHERN MYANMAR

PhD DISSERTATION

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MAY, 2011

ABSTRACT

The Naungpat-LeU-Mutthein gold prospects is situated in the Banmauk Township, Sagaing Region, Northern Myanmar. In this area, there have been many small scale local gold mines since 1980, not only primary and alluvial gold mines also. There are four gold prospects as Naungpat, Le-U, Hechein and Mutthein gold prospects. The gold mineralization is in Mawgyi Andesite and granodiorites. By the studying of field investigation, petrography, and geochemical studying, Mawgyi Andesite is mainly massive andesitic rock which is basaltic andesitic composition, calc-alkaline rock, volcanic arc basalt and granodiorites is mainly granodiorite, diorite and micro-granite which are diorite, calc-alkaline rocks, precollision zone volcanic arc granite.

Naungpat gold prospect, string out epithermal low sulphidation mineralization, Le-U gold prospect is supergene enrichment, Hechein gold prospect is mesothermal, Mutthein gold prospect is a low sulphidation epithermal mineralization by interpretation of degree of alteration, ore mineral assemblages, feature and style of mineralization.

Based on ore microscopy and geostatistical analysis of geochemical results, in Naungpat area, the ore mineral assemblage is quartz, pyrite, arsenopyrite, sphalerite, and electrum. Au-As-Ag are strongly correlated each other and arsenic is a pathfinder element, the average Au content is about 1ppm. There are two mineralization trends are nearly N-S and NNW-SSE, dipping to east and about 1m thick in the phyllic and argillic alteration zone.

In LeU area, the ore mineral assemblage is quartz, pyrite, chalcopyrite, arsenopyrite, sphalerite, argentite, god, chalcocite, coverllite and azurite. The maximum Au content is 38.5ppm and Ag is about 222.5ppm. In this area, nearly E-W trend mineralization dipping to south and generally about 2-5cm thick but sometimes 20mx15mx30m in sub propylitic alteration zone.

In Hechein area, the ore mineral assemblage is quartz, pyrite, arsenopyrite, and gold. Au-As-Ag-Fe is strongly correlated group and arsenic is used as a pathfinder element. The average Au content is 1.58ppm and the maximum is 4.2ppm. The mineralization trend is NNW-SSE direction and dipping to west. The quartz veins thickness is about 1-30cm in phyllic and argillic alteration zone.

In Mutthein area, the ore mineral assemblage is quartz, pyrite, arsenopyrite, galena and gold. Pb-Au-As-Ag is a pair of strongly correlation group. Lead is used as a pathfinder element. The average Au content is about 1ppm and the maximum is about 1.5ppm. The main mineralization is in N-S trend sheeted veins. This sheeted zone is about 1/2km wide and 2km long in phyllic and argillic alteration zone.

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