CONTROLS ON GOLD-COPPER MINERALIZATION AT PATUN AREA, BANMAUK TOWNSHIP, SAGAING REGION

PhD DISSERTATION

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ABSTRACT

The Patun area lies in the northern segment of the Inner Volcanic Arc. This area is considered as a northern continuation of the Sunda Arc of Sumatra, Indonesia.

In the Wuntho Massif, the volcano-plutonic arc comprising volcanic rocks and volcaniclastics are intruded by I-type granitoids of granodiorite, quartz diorite, diorite, dacite and tonalite.

All these events are considered to be related to Late Mesozoic and Cenozoic plate tectonism.

In the Wuntho Massif there are diverse types of gold mineralization related to specific rock types, which occur as gold-copper system, high sulphidation, low sulphidation, porphyry/skarn and mesothermal quartz-gold veins. It constitutes the largest gold metallogenic province in Myanmar.

At Patun a gold-copper high sulphidation system occurs in volcaniclastics of Mawlin Formation intruded by high level dacites of the Maingthon Dacite. Prominant silica ridges occur in the main NS trending sigmoidal-shaped Patun Fault which is considered to have controlled the mineralization. Alteration is of an advanced argillic type zoned by argillic and propylitic types. The alteration assemblage indicate fluids of low pH and moderate temperatures. Permeability of the host rocks, also could have played a role in ore control. The volcanoclastics are preferred rocks for mineralization compared to dacitic rocks as indicated by the intensity of the alteration zones.

At Lemi, mesothermal gold-copper mineralization is hosted by a granodiorite near the contact with dacite. The ores contain high gold and copper values controlled by small dilation jogs in a fault zone and caused by repeated opening for ingress of ore fluids.

At Patun Hmawgyi high gold values are found with only trace copper values. A change in the physicochemical conditions for the transport and deposition of the metals is invoked.

In the deposits investigated structure, type of host rock, pH, temperature, the hydrothermal geochemistry and probably depth of source regimes have been the major controls on mineralization.

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