Some Key Features and Possible Origin of the Metamorphic Rock-Hosted Gold Mineralization in Buru Island, Indonesia

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Abstract	This paper discusses characteristics of some key features of the primary Buru gold deposit as a tool for a better understanding of the deposit genesis. Currently, about 105,000 artisanal and small-scale gold miners (ASGM) are operating in two main localities, i.e. Gogorea and Gunung Botak by digging pits/shafts following gold-bearing quartz vein orientation. The gold extraction uses mercury (amalgamation) and cyanide processing. The field study identifies two types/generations of quartz veins namely (1) Early quartz veins which are segmented, sigmoidal, discontinous, and parallel to the foliation of host rock. The quartz vein is lack of sulfides, weak mineralized, crystalline, relatively clear, and maybe poor in gold, and (2) Quartz veins occurred within a 'mineralized zone' of about 100 m in width and similar to 1,000 m in length. The gold mineralization is strongly overprinted by an argillic alteration zone. The mineralization-alteration zone is probably parallel to the mica schist foliation and strongly controlled by N-S or NESW-trending structures. The gold-bearing quartz veins are characterized by banded texture particularly colloform following host rock foliation and sulphide banding, brecciated, and rare bladed-like texture. The alteration types consist of propylitic (chlorite, calcite, sericite), argillic, and carbonation represented by graphite banding and carbon flakes. The ore mineralization is characterized by pyrite, native gold, pyrrhotite, and arsenopyrite. Cinnabar, stibnite, chalcopyrite, galena, and sphalerite are rare or maybe absent. In general, sulphide minerals are rare (< 3%). Fifteen rock samples were collected in Wamsaid area for geochemical assaying for Au, Ag, As, Sb, Hg, Cu, Pb, and Zn. Eleven of fifteen samples yielded more than 1.00 g/t Au, in which six of them are in excess of 3.00 g/t Au. It can be noted that all high-grade samples are originally or containing limonitic materials, that suggest the role of supergene enrichment. Interestingly, most of the high-grade samples contain also high grade As (up to 991ppm), Sb (up to 885 ppm), and Hg (up to 75 ppm). Fluid inclusions in both quartz vein types consist of four phases including L-rich, V-rich, L-V-rich, and L1-L2-V (CO_2)-rich phases. Mineralizing hydrothermal fluid is typified by CO_2-rich fluid, moderate temperature of 300 -400 degrees C and a typical low salinity (0.36 to 0.54 wt.% NaCl eq). Based on those key features, gold mineralization in Buru Island meets the characteristics of LS epithermal or orogenic gold deposit types; however, it tends to be fitter with orogenic gold deposit rather than another type.
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