

Geochemical and Structural Controls of the Gold-Bearing Carbonaceous Veins Hosted Malenggang Project, West Kalimantan, Indonesia

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The Malenggang project in Sanggau is hosted by Triassic metasedimentary rocks and conglomerate which are overlain by alluvium and paleo-placer sedimentary rocks. The mineralization is associated with a northwest-striking, regional-scale shear zone that dips gently and contains parallel vein systems. A recent and systematic exploration program—including detailed geological and alteration mapping, trenching, lithogeochemical surveys, diamond drilling, geophysical surveys, and mineralogical studies—has been undertaken to target the main veins. Quartz-albite veins at Malenggang shows pinch-and-swell texture both along the strike and the deepening, indicating syn-tectonic formation. Hydrothermal alteration is dominated by albite and silica, with minor chlorite and calcite. Gold occurs in several forms, including: (i) native gold within quartz-albite veins, (ii) along carbonaceous-rich metasediments, and (iii) within the mylonitic shear zone. Gold shows a strong positive correlation with arsenic content (median of 1.4 ppm Au; 870 ppm As, n=2535). High gold grades belong to fractured highly deformed mylonitic carbonaceous mudstone and sulfide-bearing veinlets. The gold in metasediment-hosted orogenic systems is proposed to be sourced from metamorphic devolatilization during orogenic events, whereby metamorphic fluids transport gold and other metals into the shallower crust.