

Characteristics and Structural Controls on Alteration-Mineralization Carlyn-Like Type/ Sediment-Hosted Gold Deposit in Banjarnegara, Indonesia

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Gold exploration in Indonesia has so far focused on conventional gold deposits (e.g., epithermal, porphyry). The existence of gold deposits associated with sedimentary rocks, which are in fact one of the world's largest producers of gold, has been largely unexplored. Furthermore, the presence Carlyn-like type is generally found in passive margin systems. This makes it interesting to study in detail and systematically the potential of gold deposits associated with sedimentary rocks, especially in relation to geological structures in subduction arc systems. This study focuses on Rambatan formation in Banjarnegara with aim of understanding the geological conditions and characteristics of mineralization alteration, as well as how structures control alteration and mineralization. From the results of field mapping, petrographic - ore microscope analysis, and XRD, divided into four alteration zones, namely Qtz – Kao – Py (jesperoid), Qtz – Chl – Kao – Py (Jesperoid Fault Breccia), Kao – Cal – Py ± Cpy (Argilic1), and Alu – Kao – Qtz – Cal – Anh – Py (Argilic2). with mineralization controlled by structures in the form of gouge resulting from fault splay and open space filling, produce mineralization such as pyrite and chalcopyrite. FA-AAS analysis of five samples contains concentrations of Au (0.02–0.06 ppm), Ag (0.44–0.61 ppm), As (7.39–44 ppm), Cu (22.29–60.41 ppm), Pb (17.62–121.8 ppm), and Zn (46.92–461.47 ppm). The insignificant gold levels in these samples are likely due to the gold still being concentrated in the pyrite crystal system (solid solution), which is still fresh, thus requiring more focused analysis on pyrite in high oxidation condition. The sequence of structural phases starts from the pre-mineralisation structure in form of a sinistral fault (NW-SE stress), which will form dextral fault (N-S stress) as a syn-mineralisation phase with trans-tension regime, followed by a thrust fault (NE – SW stress) as the post-mineralisation phase.