

## **Veins generations and associated gold deposition in the Bonikro deposit, Fettèkro greenstone belt, Côte d'Ivoire**

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The Fettèkro greenstone belt is one of the most productive gold belts in Côte d'Ivoire. In its southern part, the intensive exploration through this Birimian belt has revealed the gold deposits of Agbahou, Bonikro and Hiré aligned in a linear distance of 40 km, thus, forming the Oumé - Hiré gold district.

The Bonikro gold deposit presents three lithological units: the mafic volcanic unit of basaltic to andesitic composition in the East, the westerly volcano-sedimentary unit made of shales, siltstone and pyroclastic lavas (basaltic to dacitic) and the felsic plutonic and dykes made of granodiorite, pegmatite, acidic lava and aplite in the center of the deposit. The deposit is dominated by a major structure: the Bonikro Shear Zone (BSZ).

The strong hydrothermal activity occurred in Bonikro can be observed by the sericitisation, the silicification, the chloritisation, the albitisation in the granodiorite and also the presence of three veins generations: sheeted, planar and transversal.

The sheeted veins are earlier: thick (1 cm) and sub-parallel sets of quartz and feldspar veins: milky quartz (70 to 80%), albite (5-10%) scheelite (up to 15%) and pyrite (up to 5%). They are characterized in the granodiorite by the fluorescent scheelite. Most of the deposit visible gold is located in the sheeted veins. The planar veins support the powellite minerals. The transversal veins are late and composed of: milky quartz (40%), calcite (30%), albite (10%), biotite (15%), and sulfides (molybdenite up to 5%). The molybdenite is the principal sulfide here. Each vein has its minerals and resumes a generation of setting.

The sheeted veins have not been notified in other Côte d'Ivoire gold deposits. These veins are known in Canada and Australia with the scheelite as the main mineral. These veins have been evoked to explain the gold deposition process in these areas and to give to the intrusive, a possible primary source of the metal. In Bonikro, each singular vein is associated with stages of gold deposition.

**Keywords:** Birimian, gold, Bonikro deposit, sheeted veins, Fettèkro greenstone belt.