Petrographic and geochemical study of the Kafin –Koro gold mineralization, northwestern Nigeria

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The study area(kafin-koro) lies within kushaka schist formation of the northwestern block of the Nigeria basement complex and Nigeria metallogenic province. The kushaka schist formation has been intruded by large volumes granitic rocks that lead to the extensive migmatisation of metasedimentary and metavolcanic rocks carrying substantial goldvalues. It has been suggested that migmatisation and metamorphic deformation of the metasedimentary or metavolcanic rocks gave rise to dissemination of gold mineralization in quartz vein and other associate rocks. Generally, the gold mineralization in northwestern Nigeria is traversed by regional northwest-southeast lineaments of shear zones which are consideredto be continental extension of an oceanic transformed fault fracture zone. Geological field mapping revealed low lying outcrop of granite and poor exposure of quartz vein and mica schists in the study area, suggesting the intrusion of mica schist by NE-SW-trending quartz vein along the foliationplaneof the mica schists. Petrographic studies of the rock thin sections under the polarised light revealed the mineral contents of hematite, limonite, pyrite and other rocks forming minerals. Geochemical analysis clearly suggests gold mineralization above the maximum anomalous value(0.1ppm) in the mica schist and quartz veins. An approximate gold composition of 1.072ppm in the mica schist suggests second enrichment of gold remobilization. The concentration of gold in the quartz veins exceeded the minimum quantity value 2ppm), thus qualifying these samples as gold ore and suggesting potential economic gold mineralization in the study area. The enrichment value of gold is above 0.004 (Clarke value), implying a relative enrichment of gold mineralization in the area