Litho-Structural Variations and Gold Mineralization around Wonaka Schist Belt, North West Nigeria

Authors : Umar Sambo Umar, Ahmad Isah Haruna, Abubakar Sadik Maigari, Muhammad Bello Abubakar

Abstract : Schist belts in Nigeria occur prominently west of longitude 80 E and sporadic to the east, they are upper Proterozioc low-medium grade deformed metasediments and metavolcanics that were intruded by Pan-African granitoids. The Wonaka schist belt, though reportedly distinctive in composition and metamorphism, is the least understood; the host for primary gold were not defined, structures which may control primary enrichment have not been delineated. The aim of this work is to determine the relationship between litho-structures and the gold around Wonaka schist belt through geological field mapping, petrographic studies and structural data analysis via ArcGis 10.2, Surfer 11.0 and Stereopro 2.0. The results show that the major rock types are mica schist and migmatites, muscovites detected during microstructural analysis suggests low-grade metamorphism in the metapelites. The shear zones identified were trending North Northeast – South Southwest (NNE-SSW), fractures trend mostly Northeast-Southwest (NE-SW) perpendicular to planes of gneissic foliations, these conform to the late Pan-African deformational episode. Pegmatite lodes, net self-cross cutting quartz veins as well as the quartz stringers hosted by both migmatites and schist are delineated as targets for primary gold mineralization, while major confluences of the streams serve as zones for secondary (placer) gold targets since the streams are dendritic and intermittent.