Geochemical Investigation of Gemstone Specks within Complex Basement Rocks of Iwajowa Area of Oyo State, Southwestern Nigeria

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Abstract

Geo-chemical analysis was carried out on complex basement rock samples serving as host rocks for tantalite, tourmaline and beryl, using Atomic Absorption Spectrophotometer (AAS). The AAS was used for the determination of major oxides, trace and rare earth elements. The results revealed the various mineral compositions of these rock samples both in part per million (ppm) and weight percentage (wt. %). The analyses revealed tourmaline to be a complex compound with high proportion of Boron (B), silica (SiO_2), Alumina (Al_2O_3), Iron (Fe_2O_3), Barium (Ba) and Titanium oxide (TiO_2) with little proportion of Mg_2O, Ca_2O, K_2O, Li, Mn, Cr, Co, V, Zr, Th, Ra, etc. Tantalite analysis revealed the presence of Iron oxide (Fe_2O_3), Tantalum oxide, Copper oxide, Niobium, Boron, and Barium with little proportion of Li, V, Ti and Cr. Beryl analysis also revealed high content of beryllium and iron with little proportion of Ti, Cr, B, Ni and Ba but with no content of Nb. Cr, Ni, V and Fe. This paper xrayed the qualities of tantalite, tourmaline and beryl samples analyzed to be of low qualities but more importantly, it has revealed the host rock of the tourmalines and beryl to be gneissic-schist.