

# Petrological and Statistical Characterization of the Limbiko Bauxite Deposit (Sangarédi, Republic of Guinea)

Abdoulaye Kadiatou Diallo<sup>1\*</sup>, Mohamed Samuel Moriah Conté<sup>1</sup>,  
Oumar Barou Kaba<sup>2</sup>, Aly Soumah<sup>1</sup>, Mohamed Camara<sup>1</sup>

<sup>1</sup>Laboratoire De Recherche Appliquée (LRA), Unité De Recherche Géologie Fondamentale Et Prospection (URGFP), Centre Emergeant Mines Et Société (CEMS) De l'Institut Supérieur Des Mines Et Géologie De Boké (ISMGB), Baralandé-Préfecture Boké, BP :84 Boké, Guinea

<sup>2</sup>Laboratoire De Recherche Appliquée (LRA), Unité De Recherche Exploitation Minière Et Valorisation Des Ressources (UREMVR), Centre Emergeant Mines Et Société (CEMS) De l'Institut Supérieur Des Mines Et Géologie De Boké (ISMGB), Baralandé-Préfecture Boké, BP 84 Boké, Guinea

\*Corresponding Author

## ABSTRACT

The demand for Aluminum due to industrial development, pushes mining companies to increase research in order to meet this demand. It is with a view to filling this void that this theme is inscribed, the objective of which is to characterize the Limbiko bauxite deposit. The methodology consists of taking samples from the pits and from the cores. The study of the cores obtained made it possible to establish stratigraphic logs, sections and geological maps. The samples were analyzed at the CBG laboratory in Kamsar. The geochemical data are processed by the statistical method. The study area is characterized by aleurolites, aleuro - argillites and Devonian argillites, where the Mesozoic dolerite sills and dykes were injected on which the Limbiko bauxite deposit of Cenozoic age developed. The stratigraphic logs highlight the succession of formations. At the base, the source rock is surmounted by the weathering crust. This weathering crust comprises four zones, in (i) the initial decomposition or saprolite zone, (ii) the clayey zone, (iii) the transition zone and (iv) the bauxite zone. The petrographic study is essentially based on the zone of lateritic and chemogenic bauxites and on the transition, zone characterized by ferruginous laterites. The two zones conceal in places the paques of ferriplantites. Mineralogical analysis shows the absence of boehmite, diaspore and the presence of gibbsite, goethite, alumogæthite, anatase, rutile, quartz, kaolinite, hydromica, montmorillonite, chlorite and potassium feldspar. The geochemical analysis of the major elements indicates that the more the SiO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub> contents decrease, the more the Al<sub>2</sub>O<sub>3</sub> content increases, while the TiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> contents increase in the same direction. . PCA confirms the mineralogical results and groups them into three components: bauxite, clay and ferrite.

**Keywords:** Bauxite, Alteration crust, Aleuro- argillite, Dolerites, Gibbsite

