

## **Structural Geology of the Lower Benue Trough: A Case Study of the Ishiagu Area of Ebonyi State, Nigeria**

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The Lower Benue Trough is a linear, intracratonic, graben basin, trending NE-SW. Its origin is associated with the separation of the African and South American continents in the Early Cretaceous. The trough is characterized by an uplifted basement block, flanked by deep basin containing about 6km of sediments. The study area (Ishiagu), which is part of the Lower Benue Trough, comprises of igneous rock types that are predominantly intermediate to high temperature minerals. Two different intrusive features were recognized in Ishiagu; these are dolerite sills at Setraco Quarry and dykes at Crush Rock Quarry Industries. Geostatistical tools including histogram, rose diagrams and stereographic projection were used to aid structural interpretation. Total organic carbon (Toc) content tests were conducted on the mudstone inclusions in the pyroclastics, and values range from 0.60% wt- 0.86% wt. The classification of source quality by Total organic content(Toc) percent shows that the source quality is fair. This indicates that prior to the eruption, the study area may have had higher organic carbon content but the heat that accompanied the eruption baked the source rock into mudstones thereby reducing the source rock quality. The thermal effect of the igneous intrusions may have increased the temperature above the liquid “oil window” limit. Organic matter in the study area has been subjected to igneous activities which may not favoured the preservation of the essential constituents of petroleum.