

Petrography, Geochemistry and Petrogenesis of Maru Amphibolite, Northwestern Nigeria

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Abstract

Amphibolite occurrence in part of Maru schist belt, northwestern Nigeria was studied petrographically and geochemically in order to establish its precursor and infer its geotectonic environment. Maru amphibolite comprises mainly of quartz + biotite + hornblende + epidote + plagioclase feldspar. Significant muscovite ± garnet ± magnetite ± pyrite ± microcline ± normative diopside and hypersthene are present. The grain size is fine to coarse, characterized by poikilitic texture, inequant and anhedral crystals. The protolith was metamorphosed to amphibolite facies conditions. Geochemically, these amphibolites are mainly intermediate to basic, subalkaline and tholeiitic in composition. Maru amphibolite is characterized with low compatible elements (Ni, Cr and Co) which implies the origin of its protolith from partial melting of depleted or metasomatised mantle or mafic crust. Its precursor is dominantly basaltic with some basaltic trachy-andesite. The paleo-tectonic environment is volcanic arc and plate alkaline basalts.

Keywords: Amphibolite, Geochemistry, Protolith, Maru

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