

Paper Number: 3356

Evidence of heterogeneous crustal origin for the Pan-African Mbengwi plutonics (northwestern Cameroon, central Africa)

Benoît Joseph Mbassa^{1*}, Emmanuel Njonfang², Mathieu Benoit³, Zénon Itiga¹, Michel Grégoire³, Pierre Kamgang⁴, Linus Nche¹, Pauline Wonkwenmendam Nguet¹, Ntepe Nfomou¹

¹ Institute for Geological and Mining Research, IRGM/ARGV Ekona, P.O. Box 370 Buéa, Cameroon

² Laboratory of Geology, Higher Teacher Training College, University of Yaoundé I, P.O. Box 47, Yaoundé, Cameroon

³ Géosciences-Environnement-Toulouse UMR 5563, Observatoire Midi Pyrénées, University of Toulouse-3, 14, avenue Édouard-Belin, 31400 Toulouse, France

⁴ Department of Earth Sciences, Faculty of Sciences, University of Yaoundé I, P.O. Box 812, Yaoundé, Cameroon

* benjo_mbassa@yahoo.fr

The Mbengwi area, located at northwestern Cameroon in central Africa is marked by the abundance of Pan-African basement relative to Tertiary magmatic and sedimentary rocks. Recent detailed study reveals that Pan-African plutonics are made up of two non comagmatic and/or cogenetic major series: i) mafic plutonics (SiO_2 : 48–52 wt. %) consist of fine-grained monzodiorite outcropping as subrounded or elongated enclaves; and ii) intermediate to felsic coarse-grained granitoids (SiO_2 : 60.8–77.9 wt. %) extending from monzonite to granite, exhibiting mylonitic structure.

The main mineral phase assemblage of the studied plutonics made up of K-feldspar, plagioclase, quartz, amphibole and biotite, is completed by muscovite in two-mica granite. The accessory phase consists of opaque minerals, sphene, apatite and zircon, while secondary minerals are pyrite, phengite, chlorite, epidote, and rarely calcite. The normative composition of granitoids is characterized by occurrence of acmite in one Biotite-granite sample (E125), and corundum (0.08–2.37 wt. %) in almost all the samples except those containing normative diopside. Mafic plutonics are marked by both lack of normative quartz, occurrence of olivine (2.02–18.9 wt. %) and nepheline (3.48–5.96 wt. %) in almost all the samples.

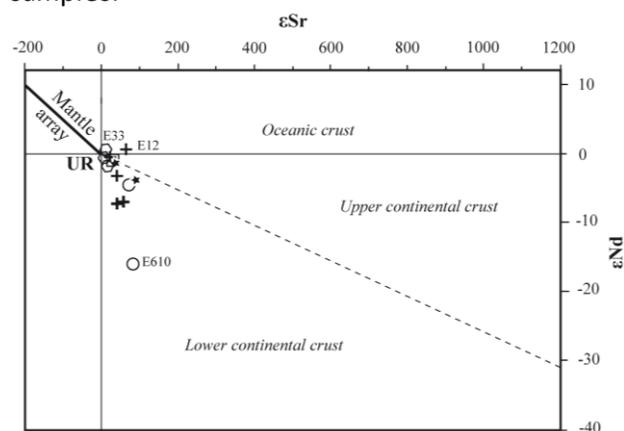


Figure.1: Location of the Mbengwi plutonics sources using the diagram of [1].

These plutonics are assigned high-K calc-alkaline to shoshonitic series, metaluminous to weakly peraluminous and mostly belong to an I-type suite (A/CNK: 0.63–1.2). They are typically post-collisional, with a subduction signature probably being inherited from their protoliths emplaced during the subduction phase.

The Sr and Nd isotopic data (figure 1) evidence that they result from melting of the lower continental crust with variable contribution of the oceanic crust.

Reference:

[1] Foucarde S. (1998) In: *Introduction à la géochimie et ses applications*: Hagemann. G. et Treuil. M. (eds.) CEA, Paris, 265–495.

