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**Two generations of gabbro in the Buem structural unit, southeastern Ghana. Constrains from petrography and geochemistry**



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The Buem Structural Unit (BSU) comprises sedimentary, volcanic and mafic-ultramafic rocks. Several studies have been carried out on the BSU to constrain its origin within the Dahomeyide orogenic belt. However, the petrographic features and geochemical characteristics of the mafic rocks, which include mainly gabbros are little known. Hence, the gabbros have been analyzed petrographically and geochemically to infer their mode of emplacement, petrogenesis and tectonic setting. From the petrography and geochemistry, two distinct gabbros have been identified, namely the B1 and B2 gabbros. The B1 gabbros are highly deformed, altered, alkaline in nature, show no significant effect of crustal contamination and show affinity to OIB/E-MORB. The B2 gabbros, on the other hand, are relatively less deformed, subalkaline, akin to N-MORB and show arc signatures with minimal crustal contamination. The geochemical characteristics of the B1 gabbros is similar to the Buem volcanic rocks. The similarity of the B1 gabbros to the volcanic rocks may suggest similar source character and tectonic setting. Thus the B1 gabbros may be related to rifting and eventual emplacement at the eastern margin of the West African Craton (WAC). The effect of significant crustal contamination and the arc nature of the B2 gabbros may suggest subduction related magmatism and emplacement after peak Pan-African collision.

Keywords: Buem Structural Unit, West African Craton, Pan-African collision, Petrogenesis, Tectonic setting

