



REVIEWER'S REPORT

Manuscript No.: IJAR-57124

Title: METALLOGENIC POTENTIAL EVALUATION OF THE PAN-AFRICAN GRANITES FROM BAFOUSSAM (WEST-CAMEROON): INSIGHTS FROM GEOCHEMICAL APPROACH

Recommendation:

Accept after minor revision.....

Rating	Excel.	Good	Fair	Poor
Originality		(✓)		
Techn. Quality	(✓)			
Clarity	(✓)			
Significance	(✓)			

Reviewer Name: Dr.Bilqees Hamza

Detailed Reviewer's Report

The academic article titled "Metallogenic Potential Evaluation of the Pan-African Granites from Bafoussam (West-Cameroon): Insights from Geochemical Approach" provides a rigorous petrographic and geochemical assessment of granitoid bodies located within the Central Cameroon Shear Zone. The author establishes that these granites, which include K-feldspar megacryst, two-mica, and biotite variants, are critical to understanding the mineral wealth of the Pan-African belt. The central thesis posits that the metallogenic potential of these plutons can be decoded through their elemental concentrations, specifically by comparing their trace and rare earth element (REE) profiles against standard crustal averages. The research utilizes geochemical mapping and statistical tools, such as box-plots and histograms, to identify significant anomalies that indicate the presence of specific metal concentrations, thereby moving the study from purely theoretical geology into the realm of practical mineral exploration.

A significant strength of the manuscript is its detailed geochemical characterization, which reveals that the Bafoussam granitoids plot in oxidized fields that overlap both specialized and non-specialized categories. The author effectively argues that these rocks are not entirely barren but possess a complex fertility profile. The data shows marked enrichment in elements such as Barium, Tin, Molybdenum, and Rubidium, with average abundances significantly exceeding those of the continental crust. Furthermore, the identification of Rare Earth Element mineralization potential provides a valuable contribution to the

REVIEWER'S REPORT

understanding of the regional geology of West Cameroon. The author's use of enrichment factors and specialized granitoid plotting provides a clear scientific basis for identifying these "subtle anomalies," which are often the key to discovering economic mineral deposits in shear zone environments.

However, for the article to achieve final academic acceptance, certain minor revisions are required to enhance its interpretive depth and structural clarity. First, the manuscript should be modified to include a more explicit discussion of the "structural controls" mentioned in the introduction. While the author identifies the N50E branch of the Central Cameroon Shear Zone as the location, the review recommends a more detailed integration of how the regional tectonic evolution—specifically the Pan-African orogeny—facilitated the fluid flow and metal concentration observed in the geochemical data. Linking the petrographic descriptions of mylonites directly to the metallogenic anomalies would provide a more cohesive "structure-to-chemistry" narrative.

Second, the author needs to refine the statistical analysis presented in the results section. While the histograms and box-plots are mentioned, the narrative would benefit from a more rigorous explanation of the "threshold" values used to distinguish between background geochemical noise and true mineralization anomalies. The revision should explicitly cite the methodology used for determining these thresholds to ensure the findings are statistically robust. Additionally, a minor stylistic adjustment is required to ensure that the transition between the mineralogical descriptions of amphibolites and the broad geochemical conclusions is more fluid. Finally, the conclusion should more forcefully synthesize the findings into a set of exploration recommendations, specifically identifying which areas of the Bafoussam pluton warrant more intensive follow-up, such as drilling or high-resolution geophysical surveys. Addressing these technical points—specifically the structural-geochemical integration and the clarification of statistical thresholds—will ensure the manuscript serves as a definitive and highly applicable reference for mineral exploration in the African continent.

Recommendations and publication decision

Subject to these minor revisions, the article is suitable for publication.