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**Evidence for post magmatic hydrothermal fluids circulation through Nana anorogenic complex granites: transformation of feldspar into biotite (annite) and rare metals (Y, Zr, La, Ce, Nd) enrichment.**

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**ABSTRACT**

The alkaline complexes of the Cameroon Line are relatively more concentrated in the Tikar plain, its central part. The preliminary results obtained in one of those complexes, the Nana complex, are presented here with particular interest on the role played by post magmatic fluids. The Nana complex consists mainly of plutonic rocks (granite, diorite, gabbro) and less abundant volcanic rocks (basalt, basaltic trachyandesites, trachyandesite, rhyolites), and is then similar to the others.

In the detail, the petrographic and geochemical study of the granites suggests that they suffered post to late magmatic hydrothermal alteration processes. It is shown in thin sections, under polarizing microscope, by the phenomena of albitisation, microclivisation, seritisation, chloritisation, kaolinisation, and the phenomenon of pseudomorphism.

Under Scanning Electronic Microscope (SEM) and microprobe minerals analyses, the phenomenon of pseudomorphism is well represented. This is marked by the partial to total substitution of alkali feldspar phenocrystals by abundant micro-flakes of biotite (annite).

We interpret the above mineral transformations as magmatic alterations likely caused by hydrothermal and metasomatic fluids. The abundance of some accessory minerals (zircon, magnetite, rutile, monazite, allanite, etc) revealed under SEM probably crystallized during this phase.

The large variations range of HFSE (Y: 36.2–1540 ppm; Zr: 181–1070 ppm) and LREE (La: 58–2210, Ce: 90–2210, Nd: 41-1810) content for SiO<sub>2</sub> low variation content (74.12-76.89%) seem consistent with the above interpretation.

These SiO<sub>2</sub>, La, Ce, Nd, Zr and Y contents added to the very low Mg (0-0.1), Ca (0.08 to 0.38 ) and K/Rb (24.97-40.89), Y/Ho (24-30), Zr/Hf (28.78-47.56) ratio are comparable to those obtained in other massifs displaying similar hydrothermal phenomena such as Strange Lake pluton in Canada [1], the Great Xing'an massive (Woduhe, Baerzhe) in China [2]

*References:*

[1] Salvi S. et al. (2006) In: Cidu, R.(Ed.) Water-Rock Interaction: Proceeding of the Tenth International Symposium of Water-Rock Interaction. I: 745-748.

[2] Bor-ming Jahn et al. (2001). *Lithos* 59: 171–198.

