Geological characteristics of the Gouap banded iron formations, Ntem Complex, southern Cameroon

L. SOH TAMEHE[1,2], C.T.WEI[1], S. GANNO[2], J.P. NZENTI[2], C. GATSE EBOTEHOUNA[3], J.D. TAKODJOU WAMBO[2]

[1]School of Resource and Geosciences, China University of Mining and Technology, Xuzhou, China (tamehelandry@yahoo.com, weighct@163.com)
[2]Department of Earth Sciences, University of Yaounde I, Yaounde, Cameroon (sganno2000@yahoo.fr)
[3] School of Civil and Environmental Engineering, University of Science and Technology Beijing, Beijing 100083, P.R. China

The Precambrian Ntem Complex contains the oldest geological formations in Cameroon, where significant banded iron formations (BIFs)-hosted iron deposits have been discovered [1-4]. Located in the NW of the Ntem Complex, the Gouap deposit largely hosts iron mineralization in magnetite-rich BIFs. Petrographical and mineralogical studies of the Gouap BIFs show that the iron minerals consist mainly of magnetite, with minor hematite and martite. Gangue minerals are quartz, amphibole, chlorite and pyroxene.

We investigated the chemistry of amphibole from the Gouap BIF drillcore samples using electron microprobe analyses. Most of amphiboles from the Gouap BIFs are Ca-rich (magnesio-hornblende, actinolite) and Mg−Fe−Mn-rich (cummingtonite) amphiboles. These characteristics suggest that the Gouap BIFs underwent amphibolite facies metamorphism [5].

In the west and north of the Gouap deposit, geochemical analyses of ferruginous laterite developped on the top of the magnetite-rich BIFs show that the iron content decreases from the surface (Fe>40%) to depth (Fe<30%). This indicates that supergene enrichment processes occur in these sectors of the deposit. Comprehensive studies of the weathering profile developed on BIFs may guide further exploration programs of the Gouap iron deposit in order to delineate iron orebodies.

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