

## **Garnet texture and chemical zoning: a clue for the history of the Mayombe (Congo-Brazzaville)**

V. BOUENITELA <sup>1,2\*</sup>, M. BALLEVRE <sup>1</sup>,  
and F. BOUDZOU MOU <sup>2</sup>

<sup>1</sup>Géosciences Rennes (UMR 6118), Université de Rennes1,  
35042 Rennes Cedex, France (\*correspondence:  
vicky.bouenitela@univ-rennes1.fr)

<sup>2</sup>Département de Géologie, Faculté des Sciences et  
Techniques, Université Marien NGOUABI, Congo

Structural and geochronological data in the Mayombe belt show evidence of two orogenic events: Eburnean (c. 2000 Ma) and Pan-African (c. 600 Ma). However, the distribution, amount and P-T conditions of Pan-African reworking of the older Eburnean basement is a matter of debate. To solve this question, a detailed petrological study of the metamorphic history of the Mayombe belt has been undertaken.

Garnet is a key mineral for understanding the tectono-metamorphic history of the Mayombe since it preserves a record of P-T conditions during its growth, expressed by chemical zoning, and it may also display some inclusion trails which can give kinematic indications. Field, textural and chemical analyses of garnets from the metamorphic rocks of the Mayombe belt reveal the existence of (i) magmatic and metamorphic garnets, (ii) normal and reverse growth zoning, (iii) narrow diffusion zoning along cracks and rims, and (iv) multistage garnets recording metamorphic overgrowths around magmatic cores.

Growth zoning of the metamorphic garnets shows evidence for one major tectono-thermal cycle, whose age is under investigation using isotopic techniques. Modification of magmatic garnet by diffusion, and the development of chlorite around garnet crystals, along cracks and in the associated matrix may have been the main effect of the Pan-African overprint on the Eburnean basement.

Keywords: Petrology, texture, garnet, zoning, metamorphism, Mayombe (Congo-Brazzaville)