



## Geochemistry and Geochronology of Peraluminous High-K Granitic Leucosomes of Yaoundé Series (Cameroon): Evidence for a Unique Pan-African Magmatism and Melting Event in North Equatorial Fold Belt

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### ABSTRACT

Geochemical and geochronological studies have been carry out on the leucosomes of Yaoundé series with the aims to identify the magma sources and to indicate their production periods and emplacement within the formations of the Pan-African North-Equatorial Fold Belt (PANEFB) in Cameroon. The Yaoundé series belongs to the Southern domain of the PANEFB and it is composed of migmatites in which two types of granitic leucosomes (in situ leucosomes and injected leucosomes) have been distinguished. These rocks display characteristic of calc-alkaline (in situ leucosomes) and high-K calc-alkaline to shoshonitic series (injected leucosomes). All the rocks are peraluminous with in situ leucosomes conform to S-type and injected leucosomes conform to I- and S-type granitoids. Major and trace elements composition reveal that in situ leucosomes derived from the partial melting of the host metapelite whereas injected leucosomes derived from the melting of metagreywacke. These sources are similar to those of granitoids from central and northern domains of the PANEFB. Th-U-Pb dating by electron microprobe (EMP) and LA-ICP-MS U-Pb dating on zircon have been used to constraints the melting event and emplacement of leucosomes in Yaoundé series. Th-U-Pb monazite dating, undertaken in two samples of leucosomes, gives two groups of monazite ages. The older group gives an age of 658 Ma whereas the age of younger group is 592 Ma. U-Pb dating of zircons from the leucosomes reveals a Pan-African age ranging from 626 to 654 Ma whereas zircons from metapelitic host rock reveal the overprinting of an early Pan-African event 911 - 1127 Ma on Palaeoproterozoic (2127 Ma) inheritance. These data clearly indicate that the host rocks of leucosomes of Yaoundé series have been firstly metamorphosed during Tonien-Stenien period (911 - 1127 Ma) and reveal the existence of extended unique melting event (592 and 658 Ma) in the Yaoundé series which is contemporaneous with the magmatism responsible for the emplacement of granitoids in the other domains of the PANEFB.

### KEYWORDS

Pan-African North-Equatorial Fold Belt; Yaoundé Series; EMP Monazite Dating; LA-ICP-MS U-Pb Dating, Leucosomes; Peraluminous; Melting Event; Magmatism

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