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Zircon trace element geochemistry and Ti-in-zircon thermometry of the Linté Pan-African post-collisional granitoids, Central Cameroon: Constraints on the genesis of host magma and tectonic implications

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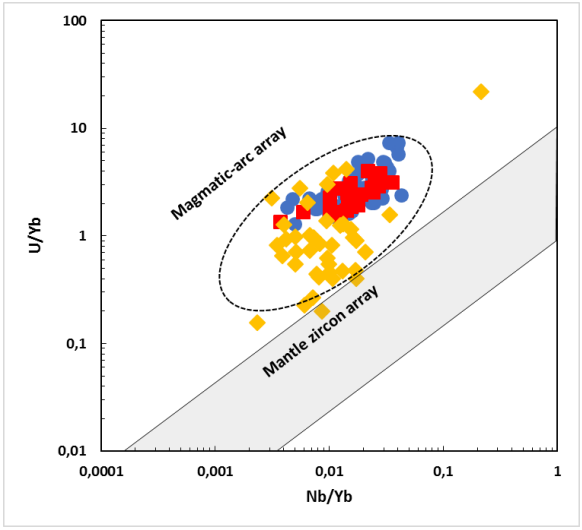

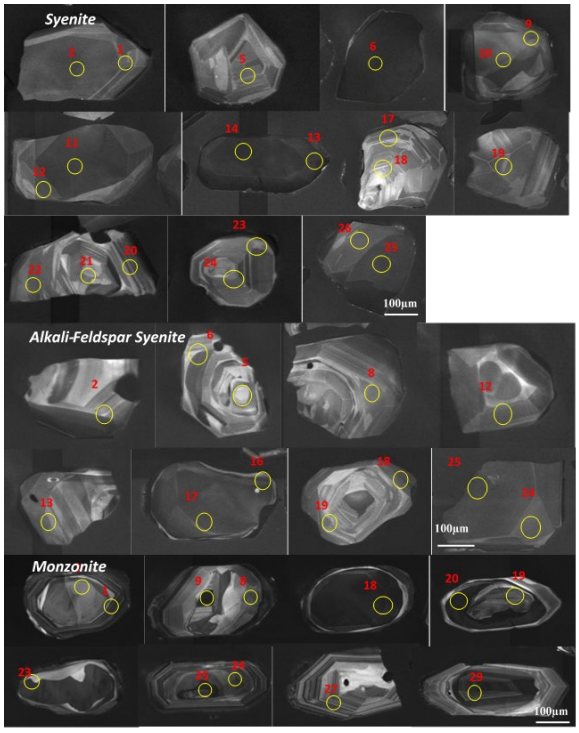

The Linté area belongs to the central part of the Adamawa-Yadé Domain (AYD) within the Pan-African Central Africa Fold Belt (CAFB) in Cameroon. This area is dominated by Neoproterozoic high-K calc-akaline syenite and monzonite intruding Archean to Paleoproterozoic gneisses. In this contribution, trace element compositions of zircon obtained using LA-ICP-MS are used to constrain the petrogenesis and tectonic setting of Linté area. The analyzed zircon grains display restricted range of Hf content with an average of 8197 ppm in syenite, 8220 ppm in alkali-feldspar syenite, and 9026 ppm in monzonite. They display high Th/U ratios (> 0.5) typical of magmatic zircons. The monzonite zircons have a higher SREE content (483.42 ppm) than the syenite zircons (237.70 ppm). The chondrite-normalized REE diagram of Linté samples show very similar patterns, characterized by a steeply-rising slope due to important HREE enrichment relative to LREE, with distinctive positive Ce and negative Eu anomalies. Application of the Ti-in-zircon thermometer to the analyzed zircons depicts a wide range of crystallization temperatures (574 - 1137 °C for syenites and 713 - 1008 °C for monzonite), implying a deep level of melting, likely within the lower continental crust of the CAFB. The integration of geochemical behaviors of some trace elements (U, Hf, Zr, Ce, Th and Nb), together with discrimination diagrams, suggest the crystallization of a continental crust derived magma under variable oxidation states, and emplacement in a magmatic-arc setting. This finding conforms to the N-S geodynamic convergence model between the AYD and the northern border of the Congo Craton.