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Rare Elements Granite-pegmatites in Kivu Region (D.R.Congo)

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In Democratic Republic of Congo, the Kibaran orogenic and metamorphic belts host many syn- or late tectonic granite-pegmatites, which are genetically linked to rare metals endowments. This contribution investigated four major granite-pegmatites in Kivu region worldly known for their Nb-Ta-Be-Sn-W producing mineralization in central Africa. The selected granite-pegmatites fields are Lemera, Numbi, Kalehe (South-Kivu province), and Mokama (Maniema province). Major- and trace-elements data from previous published data of the mentioned pegmatitic fields were used in this contribution with the objective of further clarifying their petrogenesis, genetic relationship, and geodynamic emplacement. The pegmatites investigated were shown to be S-types formed in a very active continental margin during the orogenic process associated with the almagamation of the Rodinia megacontinent. The petrogenetic processes involved in the emplacement of these pegmatitic fields were controlled by a magmatic evolution through a strong fractional crystallization. Lemera pegmatites are geochemically the less differentiated pegmatites in the Kivu region, a result consistent with its Sn value <5 ppm while the pegmatites of Numbi, Kalehe, Mokama depicted a higher Sn value ranging between 12 and 2,451 ppm, confirming their strong geochemical differentiation signature. The pegmatites of Kivu region are likely to be originated by muscovite-dehydration melting environment of dominantly metagraywackes and clay-poor sources. However, Numbi, Kalehe, and Lemera are petrogenetically derived from sediment melts, whereas some of Mokama pegmatites are proving to have a slab-derived fluids signature, which might be supported by the Cu endowment noticed in the previous research.