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Niobium contents of the lateritic soils of Bingo in the Democratic Republic of Congo

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Niobium has been classified among critical raw materials by several developed countries. This has led to the exploration and exploitation of these resources around the world. Niobium is mainly sourced from carbonatites and to a few extent from alkaline igneous rocks and pegmatites. The Bingo carbonatite complex is one of the few carbonatite complexes which are known in the Democratic Republic of Congo (DRC), mainly in the western branch of the East African Rift System (EARS). Most of carbonatites in this country are found in the tropical regions, where daily rain and change of season affect these outcrops and create thick lateritic soil profiles [1]. These laterites are enriched in minerals such as pyrochlore and phosphate minerals. Pyrochlore is an important mineral that contains niobium. A geochemical evaluation of the Bingo laterites indicates huge concentrations of niobium. The range of concentrations varies from 3550 ppm as the lowest concentrations to 143,900 ppm of niobium. The study has indicated that the Bingo laterites are highly enriched in niobium and evaluation research proved that these laterites contain up to 7 Mt at a grade of 2.86% niobium oxide (Nb_2O_5) [1]. The Bingo carbonatite has also been speculated among some key places where rare earth elements can be discovered due to its high grade of Nb_2O_5 in the laterites samples [2,3].

[1] Kasay, Bolarinwa, Aromolaran, Nzolang, Mambo (2021), *Applied Earth Science* 30, 143-160

[2] Goodenough, Wall, Merriman (2018), *Natural Resources Research* 27, 201-216

[3] Kasay, Bolarinwa, Aromolaran, Nzolang, Kivava (2022), *Mining, Metallurgy & Exploration*