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Contribution to the Mineralogy and Geochemistry of the Carbonatite-Bearing REE-Gold-Silver Mineralization at Kasr El-Bassel Area, South El-Fayoum, Upper Egypt

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ABSTRACT

The studied carbonatite mineralization is represented mainly by aragonite and minor monazite, xenotime, bastnasite, weinschenkite, zircon with detrital quartz and feldspars. The mineralization is associated with silicified picrite porphyry and silicified kimberlite semi-ring dykes. Banded skarn sheets and lenses were formed during a contact-metamorphic process. The host rocks are Quaternary Protonile and Prenile sediments and other Middle Eocene limestones.

The mineralized bodies also comprise native gold, electrum, Au-bearing pyrite, krennerite, native silver, argentite, cerargyrite, proustite, chrysocolla. While, rutile, chromite, pyrrhotite
and cobaltite are the associated ore minerals.

I n the northern part of the area, a black silicified Middle Eocene limestone rich with graphite forms a semi-circular stock, and is accompanied by some ultrabasic-basic bodies. These are commonly associated with the REE-rich carbonatite-bearing rocks. Southwards, the black rock is covered by mineralized skarn bodies, particularly where siliceous volcanics are exposed. While, at the north-eastern part, the area is mainly covered by dunite rock with abundant chromite pods and lenses.

Some aggregates of spherical and separate diamond crystals are associated with the altered kimberlite, picrite porphyry and chromite-rich dunite, paricularly where the garnet mineral pyrope is present.