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## Mineralogical and geochemical characterization of Lower Cretaceous Sandstones at Gabel El Ghurfa, Eastern Desert, Egypt

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Gabel El Ghurfa area is situated at the eastern part of Natash volcanics, south Eastern Desert, Egypt. Gabel El Ghurfa forms a ring dyke (2km<sup>2</sup>) with a diameter of 1.2 km and mainly composed of normal and alkaline trachyte at the outer zone with high relief (49 Ma, by <sup>40</sup>Ar/ <sup>39</sup>Ar method). The inner zone of the ring (600 m in diameter) is mainly represented by Cretaceous Lower Nubia Sandstones (LNSS) that extruded by minor trachyte plug. They are mainly composed of quartz arenite (at the base), greywacke, calcareous sandstone and conglomerate (at the top). The Lower Cretaceous sandstones are bearing radioactive minerals (metaheirichite, autunite, uranophane and uranothorite), niobate- tantalite (yttrocolumbite and yttrotantalite), base metals (gold, brass alloy and zincite), sulfides (argentite, pyrite, galena and hauerite), and accessories (zircon, monazite, fluorite, taenite, rutile and allanite). The occurrence of native gold (1.5-8 g/ton) and uranium minerals in LNSS (75-195ppm) is considering a first record in Egypt.

The geochemical data of the bulk LNSS samples reflects the enrichment of SiO<sub>2</sub>, CaO, U, Au, Zr, Ba, Sr, Ti, Cr and Ni. The LNSS deposited in semi-arid to semi-humid climatic conditions. Their total REEs contents vary between 50 and 295 ppm and characterized by (1) enrichment in light rare earth element (LREE), (2) depletion in heavy rare earth element (HREE) and (3) negative Eu- anomaly.

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