Distribution patterns of major and trace elements in gold mines using neutron activation analysis - Egypt

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Abstract

The present work was conducted to outline the elemental composition of soil samples from some selected gold mines in Egypt namely; Sukari and Hamash mines. Sukari and Hamash granitoid pluton are situated in the Central Eastern Desert of Egypt and is considered one of the best examples of the gold-bearing granites in the Arabian Nubian Shield. A total of 19 and 20 soil samples were collected from Sukari and Hamash, respectively. The samples were collected according to the International Atomic Energy Agency TECDOC-1415. The samples were subjected to neutron activation analysis at the reactor IBR-2 Frank Laboratory of Neutron Physics FLNP – Joint Institute for Nuclear Research JINR. A total of 32 and 26 elements were determined in Sukari and Hamash, respectively. In addition, the concentrations of the determined elements in mg/kg were calculated using a developed software at FLNP – JINR. The quality of the measurements was weighted using certified reference materials. The basic descriptive statistics was performed and the obtained concentrations were found to be considerably high for rare earth elements and U in both gold mines. The obtained data are considered as a baseline data for characterizing the gold mines in terms of the elemental content of the soil.

Keyword**:** *neutron activation analysis/ major and trace elements/ gold mines*

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