

Rb/Sr and Sm/Nd isotopic systems of El Sukari gold bearing granite, Eastern Desert, Egypt.

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The Eastern Desert of Egypt is characterized by widespread occurrences of granitic rocks belonging to Pan-African Precambrian belt. El Sukari gold bearing granite pertain to the group of Younger Granites (Older Granites is the other major group), of Eastern Desert. The Present study utilizes Rb- Sr and Sm-Nd isotopic data of El Sukari granite in order to follow time of different alterations and to assign the corresponding time of mineralization. Eighteen selected samples, separated albite, muscovite and chlorite are isotopically measured. The Rb/Sr plots of the separated minerals are fairly fitted with their corresponding whole rock isochron indicating isotopic homogenization during alteration. The fresh granitic samples assign age 559 ± 6 Ma with relatively low Sr ratio ($=0.703008 \pm 0.002$) and ($N=6.89$). The fresh granitic rocks are latter affected by Na-metasomatic processes forming albitized granite around 520 ± 11 Ma (Sr ratio $=0.702053 \pm 0.0004$ and Nd ratio $=0.508137 \pm 0.0007$). The muscovite granite represent much younger alteration phase and yield age of $382 \pm$ (Sr ratio $=0.70873 \pm 0.0007$ and Nd ratio $=0.515104 \pm 0.0002$). The granitic rocks are, finally, affected by late hydrothermal solution with development of chloritized type of granite. Both separated chlorite and chloritized granite yield age of 229 ± 16 Ma (Sr ratio $=0.709528 \pm 0.0003$ and Nd ratio $=0.510057 \pm 0.0002$). Both Rb/Sr and Nd/Sm assigned ages are consistent in different rock types. It suggested that the gold bearing solutions are induced around 529Ma and connected with Na –metasomatism affected the area.