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**GEOCHRONOLOGICAL STUDIES OF
SOME GRANITIDS ; APPLICATION TO
GEOCHEMICAL EVOLUTION AND
TECTONIC HISTORY OF THE NORTHERN
EASTERN DESERT, EGYPT**

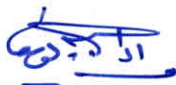
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ABSTRACT

Seven granitoid masses in the north Eastern Desert, Egypt, have been studied petrographically, geochemically and geochronologically dated by Rb-Sr isochrons in order to assess the role of granitic magmatism in the evolution of that sector of the Egyptian basement. These masses are north Wadi Hawashiya granodiorites (841 Ma), the hornblende-biotite granites of Abu Marwa (641 Ma), Umm Araka-Loman (606 Ma) and Milaha (584 Ma), and the biotite granites of Abu Harba (590 Ma), Gabal Qattar (570 Ma) and north Wadi Hawashiya (556 Ma). These granitoid masses exhibit hypidiomorphic to panidiomorphic granular textures. They are two feldspars subsolvus granites indicating very slow rates of cooling allowing subsolidus reactions to take place.

The major and trace elements geochemistry indicate that the north Wadi Hawashiya granodiorites originated from a calc-alkaline peraluminous magma. The rocks exhibit the characteristics of I-type granites. They are depleted in (LIL) elements and have fractionated REE-patterns with no or small positive Eu-anomaly. They were emplaced in a pre-plate collision setting indicating subduction related magmatism within a thin unstable crust.

The younger hornblende-biotite granites of Abu Marwa and Milaha originated from a calc-alkaline peraluminous magma developed in a volcanic island-arc setting while those of Abu Harba and Umm Araka-Loman were developed in a syn-collision type setting. These rocks exhibit fractionated REE-patterns with small to moderate negative Eu-anomaly. The younger granites of Gabal Qattar and north Wadi Hawashiya originated from a calc-alkaline magma enriched in Rb relative to Sr and Ba indicating alkaline affinity and were emplaced in a within-plate tectonic setting. They exhibit a fractionated LREE pattern and a flat HREE one with a

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