GEOLOGICAL, STRUCTURAL AND GEOCHEMICAL STUDIES ON THE PAN-AFRICAN BASEMENT ROCKS, WADI ZEIDUN, CENTRAL EASTERN DESERT, EGYPT

A THESIS

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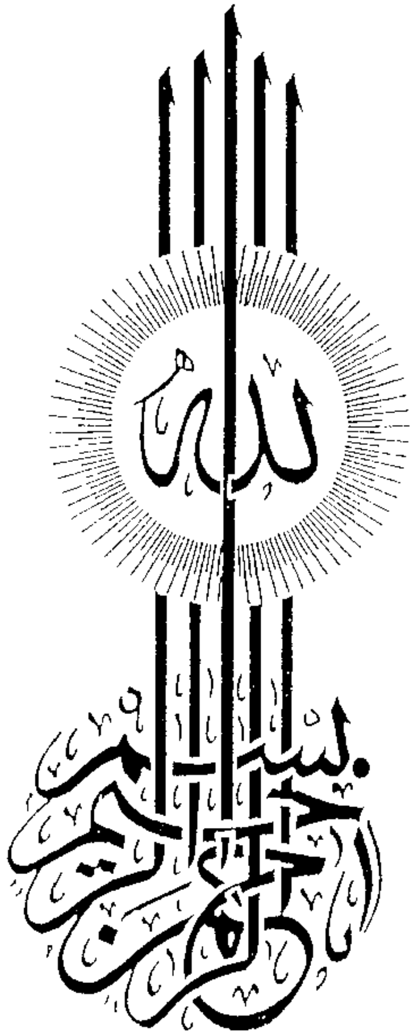
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ABSTRACT

The present work is a geological, structural and geochemical study on the Pan-African basement rocks in the area of Wadi Zeidun and its southern tributaries Wadi Maasar and Wadi Meesar, which cover approximately 600 km^2 in the Central Eastern Desert of Egypt.

Detailed field studies revealed that the area comprises four main petrotectonic assemblages: 1)- Island-arc assemblage; 2)- Volcanogenic metasediments; 3)- Molasse-type sediments, and 4)- Late-collision granitoids and felsites as well as minor dykes and veins.

The island arc-assemblage in the study area includes low-k, calc-alkaline/tholeiitic metavolcanics and a volcaniclastic sequence intruded by Wadi Maasar arc-granitoids.

The volcanogenic metasediments east and northeast of Gabal El Shalul are composed mainly of a foliated, cleaved and bedded sequence of green metaconglomerates interbedded with grey phyllites, slates, metamudstones, metasiltstones and graded bedded metagreywackes. The petrochemical characters of these rocks revealed that they are comparable with the oceanic island arc sandstones.

The molasse-type sediments in the study area form three isolated exposures (basins). They are composed mainly of a succession of interbedded purple conglomerates, sandstones and siltstones of alluvial fan-braided stream deposition. The modal composition of these sandstones plot in the two fields of dissected arc and recycled orogen.

The late-collision granites are represented by two main plutons; El Shalul and El Hassanawia. Both are essentially pink in colour, composed mainly of quartz, perthite, plagioclase and minor biotite in addition to hornblende in El Hassanawia granite. The geochemistry of these granites shows a calc-alkaline character of normal granite composition, being formed in an environment of compression.