PETROLOGICAL AND GEOCHEMICAL STUDIES ON THE METAGABBRO - DIORITE COMPLEX IN WADI AMBAUT EASTERN DESERT EGYPT

A Thesis Submitted

By

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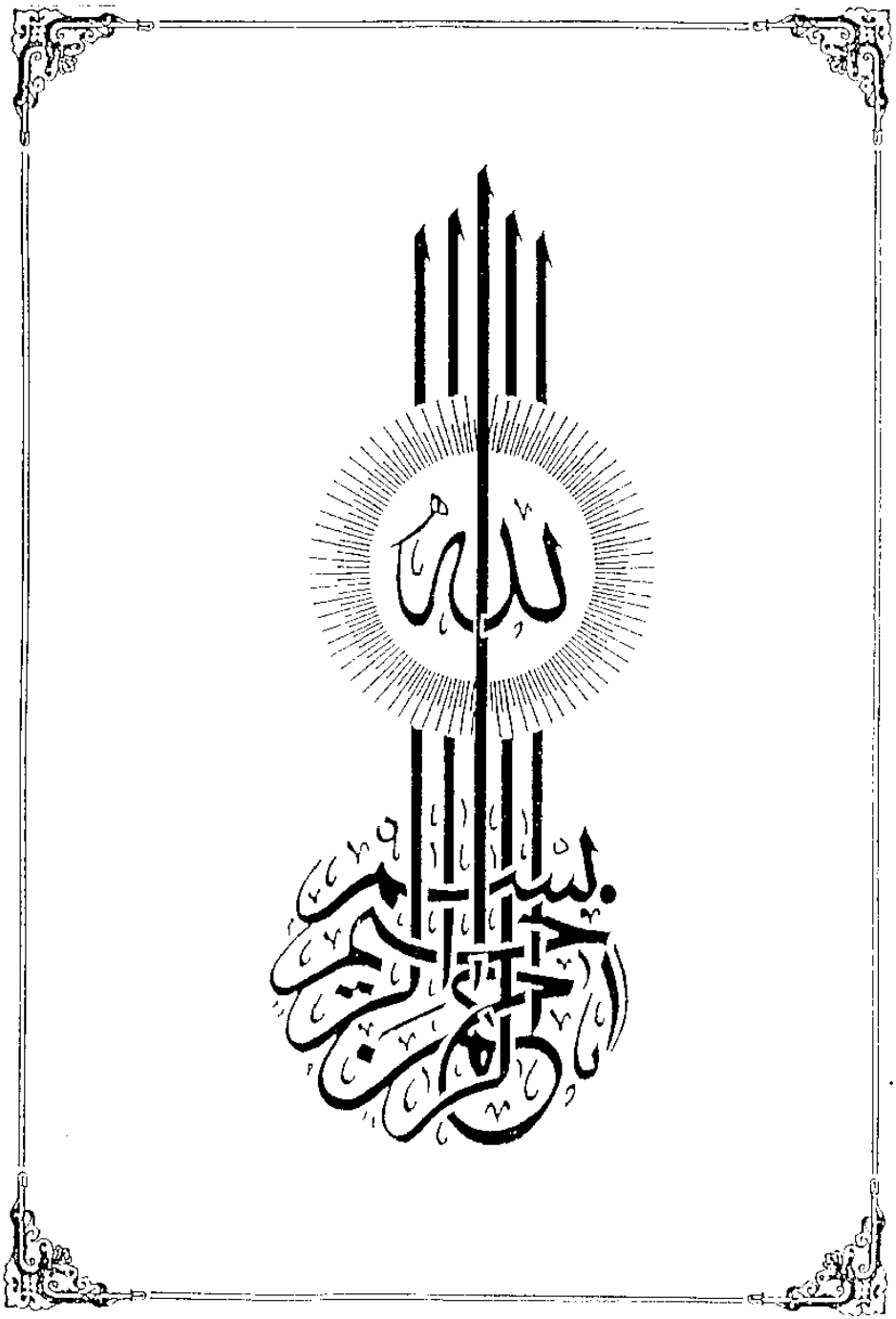
ABSTRACT

Field investigation and petrological studies of the metagabbro-diorite complex occurring in Wadi Ambaut in the Central Eastern Desert of Egypt revealed that the metagabbroic mass includes actinolite-hornblende metagabbro, actinolite leucometagabbro, chlorite-saussurite metagabbro, biotite metagabbro, quartz injected metagabbro as well as relics of preexisting fresh gabbros.

Metasomatism was operative near contacts with the granodiorite and resulted in the introduction of biotite, chlorite, quartz as well as the saussuritisation of plagioclase and local hybridisation.

Diorites are differentiated into microdiorites, coarse-grained diorites, quartz diorites and tonalites. Microdiorites are considered as late members of the gabbroic intrusion, whereas coarse-grained quartz diorites and tonalites are considered as the marginal facies of Rabdi granodiorites.

The petrochemical andgeochemical study, based on the complete silicate analysis of 15 representative samples indicates the presence of two magmatic suites namely tholeiitic and calc-alkaline suite. Almost all the metagabbro samples plot in the field of tholeiites and some diagrams confirm that these metagabbros mimic the evolution trend of mid-oceanic ridge basalts (MORB). The diorites, on the other hand, show affinity towards the calc-alkaline series. Some diagrams show that they occupy the field of arc tholeiites. However plotting is far from the trend line of abyssal tholeiites which precludes in turn the possibility that the diorites belong to the same magma series of metagabbros.



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NOTE

The present thesis is submitted to the Faculty of Science, Ain Shams University in partial fulfilment of the requirements for the degree of Master of Science in Geology.

Beside the research materialized in this thesis, the candidate has attended and successfuly passed examination in the following courses :

1- Field Geology.
2- Sampling.
3- Photogeology.
4- Crystallography.
5- Mineralogy.
6- Sedimentary Petrology.
7- Igneous Petrology.
8- Metamorphic Petrology.
9- Geochemistry.
10- Language.

Head Departement of Geology

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