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Ain Shams University  
Faculty of Science  
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# **Stratigraphic and Paleoenvironmental study of the Eocene rocks at Gebel Mokattam and its neighboring areas, Greater Cairo, Egypt**

**A THESIS**

Submitted for Partial Fulfillment of the Requirements for the Degree  
of M.Sc. in Geology

By

**Mohamed Mabrouk Abd El Monaim Mabrouk**

B.Sc. (Hons.) 2013

Supervised by

**Prof. Dr. Yasser Abd El-Hakeem EL Safori**

Emeritus Professor of Paleontology and Stratigraphy, Geology Department,  
Faculty of Science, Ain Shams University.

**Prof. Dr. Abdel-Mohsen Mohamed Morsi**

Professor of Paleontology and Stratigraphy, Geology Department,  
Faculty of Science, Ain Shams University.

**Prof. Dr. Ashraf Rushdi Baghdady**

Emeritus Professor of Sedimentary Petrology, Geology Department,  
Faculty of Science, Ain Shams University.

To

Geology Department  
Faculty of Science  
Ain Shams University

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Master Degree Supervisor's Signatures

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By

Student name/ Mohamed Mabrouk Abd El Monaim  
Mabrouk

To

Geology Department

Faculty of Science - Ain Shams University

Supervised by

Prof. Dr. Yasser Abd El-Hakeem EL Safori

Emeritus Professor of Paleontology and Stratigraphy, Geology  
Department, Faculty of Science, Ain Shams University.

Prof. Dr. Abdel-Mohsen Mohamed Morsi

Professor of Paleontology and Stratigraphy, Geology Department,  
Faculty of Science, Ain Shams University.

Prof. Dr. Ashraf Rushdi Baghdady

Emeritus Professor of Sedimentary Petrology, Geology Department,  
Faculty of Science, Ain Shams University

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- Thesis title / Stratigraphic and Paleoenvironmental study of the Eocene rocks at Gebel Mokattam and its neighboring areas, Greater Cairo, Egypt
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- Supervisory Authority /
  - 1) Prof. Dr. Yasser Abd El-Hakeem EL Safori - Emeritus Professor of Paleontology and Stratigraphy, Geology Department, Faculty of Science, Ain Shams University.
  - 2) Prof. Dr. Abdel-Mohsen Mohamed Morsi - Professor of Paleontology and Stratigraphy, Geology Department, Faculty of Science, Ain Shams University.
  - 3) Prof. Dr. Ashraf Rushdi Baghdady - Emeritus Professor of Sedimentary Petrology, Geology Department, Faculty of Science, Ain Shams University.
- Members of the Judging Committee /
  - 1) Prof. Dr. Abdel-Galil Abdel-Hamid Hewaidy - Emeritus Professor of Paleontology and Stratigraphy, Geology Department, Faculty of Science, Al-Azhar University.
  - 2) Dr. Radwan Abdelaziz Abulnasr - Emeritus Professor of Stratigraphy, Biological & Geological Sciences Department, Faculty of Education, Ain Shams University.
  - 3) Prof. Dr. Yasser Abd El-Hakeem EL Safori - Emeritus Professor of Paleontology and Stratigraphy, Geology Department, Faculty of Science, Ain Shams University.
  - 4) Prof. Dr. Abdel-Mohsen Mohamed Morsi - Professor of Paleontology and Stratigraphy, Geology Department, Faculty of Science, Ain Shams University.

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Employee Signature

Director of Studies Department Signature

Faculty Secretary

## **Note**

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

In addition to the research work materialized in this thesis, the candidate has attended the following M.Sc. courses for one year in the following topics:

1. Advanced Structural Geology
2. Geotectonics
3. Advanced Lithostratigraphy
4. Biostratigraphy
5. Micropaleontology
6. Paleoecology
7. Sedimentation
8. Sedimentary Petrology
9. Field Geology
10. Geostatistics

He successfully passed the final examination in these courses. In fulfillment of language requirement of the degree, he also passed the final examination of a course in the English language.

Head of Geology Department

Dr. Karim W. Abdelmalik

## ABSTRACT

The Middle-Upper Eocene succession exposed in the study area at Gebel Mokattam and Maadi is divisible from base to top into the Mokattam Group (Observatory Formation) and the Maadi Group (Qurn, Wadi Garawi and Wadi Hof formations). The Eocene rocks in the area yielded twenty six ostracode species from the Upper Eocene succession at the Duwaiqa area in Gebel Mokattam and at the Maadi. Among the recorded ostracode species, *Triginglymus maadiensis* is newly erected. The recorded ostracode fauna has been biostratigraphically evaluated. It was possible to recognize two ostracode zones, *Paracosta humboldti* Zone and *Uromuellerina saidi* Zone, which have been both recorded in the Priabonian.

The microfacies investigation of the carbonate rocks represented in three stratigraphic sections revealed the recognition of seven microfacies types in the Duwaiqa section, two microfacies types in the New Duwaiqa section, and six microfacies types in the Maadi section. The recorded microfacies types are comparable to five Standard Microfacies Types (SMF 5, SMF 8, SMF 9, SMF 12, and SMF 14) and three "Standard Microfacies Belts" (FZ) of Wilson (1975) (FZ4, FZ6, and FZ7). These types implicate that the Observatory and Wadi Garawi formations were deposited in a foreslope environmental setting, the Qurn Formation in a setting ranging from foreslope to open platform (shelf lagoon), while the Wadi Hof Formation was deposited in a winnowed platform edge sands environment that changed into open marine platform facies

(shelf lagoon) and foreslope. Generally, the Eocene sequence exposed in the area reflects shallow marine settings with relatively deeper conditions towards the southeast. Shelf settings are further supported for the ostracode yielding parts of Wadi Garawi and Wadi Hof formations as indicated by dominance of representatives of the Trachyleberididae and Hemicytheridae which are both represented by taxa possessing eye-spots, besides the Loxoconchidae and Xestoleberididae, which become more frequent in the shallow phytal zone of the shelf.

**Keywords:** Ostracoda, Microfacies, Eocene, Taxonomy, Stratigraphy, Paleoenvironment, Greater Cairo, Egypt.

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