GICAL, MINERALOGICAL AND GEOCHEMICAL STUDIES ON RECENT OONAL SEDIMENTS FROM THE MEDITERRANEAN COASTAL ZONE OF EGYPT WEST OF ALEXANDRIA, EL-ALAMEIN AREA

A THESIS

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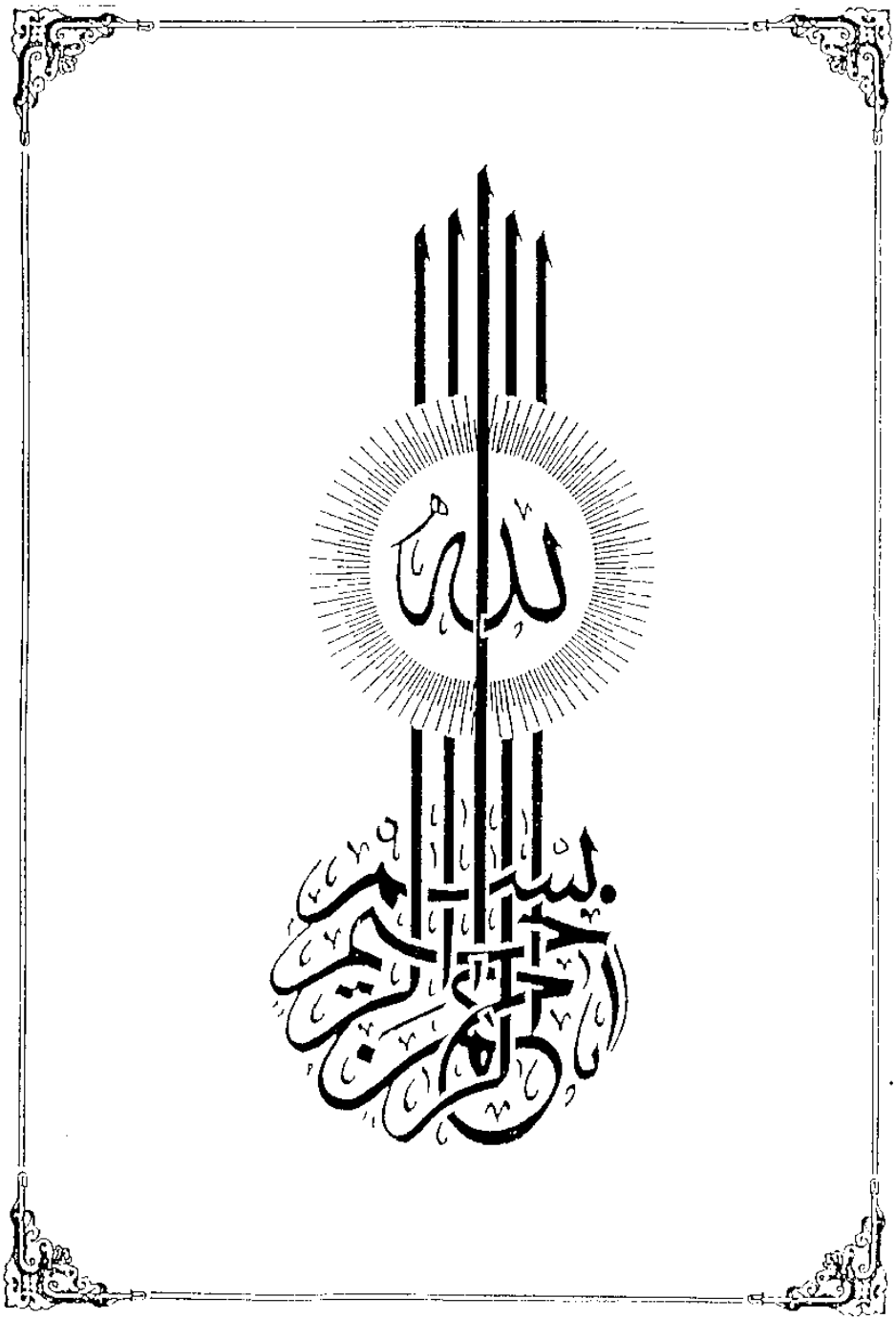

ABSTRACT

The object of the present work includes the study of the geology, mineralogy and geochemistry of the Recent lagoonal evaporites and the associated sediments.

The area studied, some 110 kms west of Alexandria is part of the northern coastal zone of Egypt, and extends 20 kms east and west El-Alamein Rest House. The area is a semi-arid region with an annual rainfall of about 19 cm. (September to May), and monthly average air temperature is about 30°C, high net evaporation which is about 2 m., produces hypersaline lagoon water (87-159 ‰) i.e. two to five times the concentration of sea water salinity.

Sampling was from pits and by coring. Petrographical, mineralogical and geochemical techniques were employed for the analysis of lagoonal and tidal flat sediments, lagoon water, ground water and extracted interstitial brines.

This study reveals that Recent carbonate and evaporitic sediments are developed in these foreshore hypersaline lagoons. Evaporitic minerals are gypsum, halite, and celestite, and the carbonate minerals aragonite, calcite, Mg-calcite and dolomite.

Blue green algal species are growing in the margins of the lagoons and in the intertidal flats. The blue green algae trap and bind carbonate and evaporite sediment particles, forming cryptalgal fabrics. The laminae clusters are composed of aragonite pellets and gypsum crystals. The resulting sediment is well laminated and resembles various types of stromatolite that have been described elsewhere.

The coastal ridge is lower and narrow in the studied area, so the lagoons easily receive water by seepage under the coastal ridge and overtopping during storms.

Gypsum forms in different habitats. It is the most abundant mineral in the area environment, where it is

LIST OF CONTENTS

PAGE

LIST OF FIGURES

Fig. No.

PAGE

Fig. No. PAGE

Fig. No. PAGE

LIST OF TABLES

Table No. **PAGE**