بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائـــــق الاصليـــة تالفـــة

بالرسالة صفحات لم ترد بالاصل

MINERALOGY, GEOCHEMISTRY AND ECONOMIC EVALUATION OF SOME KAOLIN OCCURRENCES IN EGYPT

THESIS

SUBMITTED TO THE FACULTY OF SCIENCE, TANTA UNIVERSITY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN (SCIENCE)
GEOLOGY

By

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TO

GEOLOGY DEPARTMENT

FACULTY OF SCIENCE

TANTA UNIVERSITY

2005

TO THE SPIRIT OF MY DEAR MOTHER

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DECLARATION

I declare that the contents of this thesis have not previously been submitted for a degree at this university or any other universities.

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CONTENT

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ABSTRACT

The present work is concerned with the geology, mineralogy, geochemistry and economic evaluation of the Carboniferous and Cretaceous kaolin in west central Sinai (Egypt). Some selected localities representing the Carboniferous kaolin included: El Esila, El Khaboba and El Shallal. The Cretaceous kaolin deposits were collected from El Tih , Mussaba Salama and El Dehesa areas. The X-ray diffraction analysis, differential thermal analysis and thermogravemitric analysis proved that the deposits in all localities are composed mainly of kaolinite and quartz with subordinate amounts of montmorillonite and illite and small amounts of hematite, goethite and alunite (mainly in El Khaboba).

The heavy minerals study indicated that the Carboniferous and Cretaceous kaolin deposits in the studied areas are composed mainly of opaque minerals represented mainly by hematite in the Carboniferous kaolin and hematite and ilmenite in the Cretaceous kaolin. Non opaque minerals included: amphibole, zircon, biotite, epidot, kyanite, pyroxene, rutile, tourmaline and chlorite (and monazite in Cretaceous kaolin). The identefied heavy grains revealed that the source rocks were mainly igneous (acidic plutonic) rocks with subordinate of basic and metamorphic rocks.

The chemical composition of the studied kaolin indicated that these sediments have high alumina content and very low content of alkalies and relatively high iron and titanium contents. Trace elements content of these sediments (which are rich in Zr, Ga and V but are poor in Co, Ni, Cu, Zn and Rb) favor the sedimentary origin and the fluvial environment of these kaolins,

The radioactivity analyses and alpha track study of the Carboniferous kaolin reveald that radition is present either as adsorbed on clay minerals, captured by iron oxides or included in the carrier minerals as zircon. However, in the Cretaceous kaolin, radiation is related mainly to zircon minerals.

Clues about genesis are all favour the sedimentary origin of the sediments and the influence offluvial processes. Weathering was intense for Carboniferous than for Cretaceous kaolin.