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التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها
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بالرسالة صفحات
لم ترد بالأصل

Spectrophotometric Study of Some Constituents in Portland Cement

A Thesis

Presented to the Faculty of Science, Assiut University
as Partial Fulfillment of the Master Degree
of Science (Chemistry).

By

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B.Sc. (Chemistry) , 1986

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Chemistry Department,
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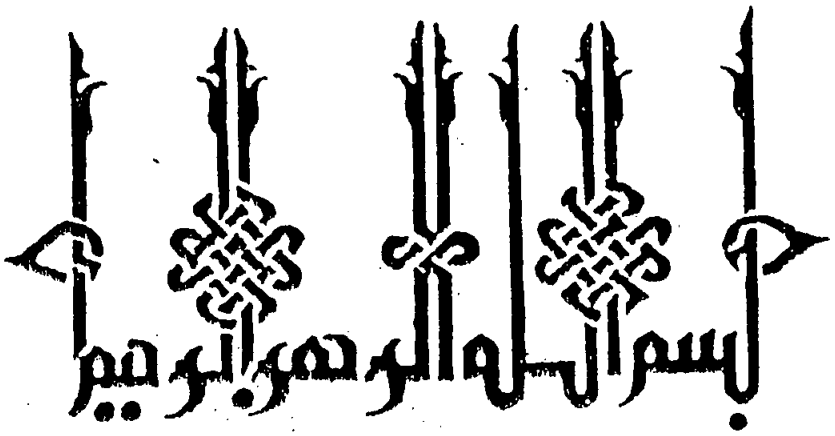
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Spectrophotometric Study of Some Constituents in Portland Cement

Approved:

Name	Signature
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Head of Chemistry Department :

Name : Prof. Dr. Saud A.M. Metwally

Signature : ----------

Date : ----------

To My Wife
and My Daughter

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Hassan M.M. Ahmed

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CHAPTER THREE

Rapid Test Methods For Some Components Analysis of Portland Cement(Results and Discussion)

SUMMARY

SUMMARY

This thesis includes a spectrophotometric study of some constituents in Portland cement. The main objective of the work is to make use of uv-visible spectrophotometry in the development of new rapid test methods for some components analysis of portland cement. Description of cement or clinker composition is normally carried out by chemical analysis to give the contents of major and minor constituents expressed as oxides. In a cement plant, on-line control of the composition of raw meal is necessary to maintain the composition of cement within strict requirements. The improvement of the product quality is tantamount to improvement of the chemical composition. The cement constituents investigated in this work have individual and combined effects on the burning process in cement manufacture and consequently the mineralogical composition of clinker, in addition to their effects on the quality of cement.

In the present work, new spectrophotometric procedures for direct determination of Mn_2O_3, MgO and Al_2O_3 content of portland cement and cement clinker are developed. The methods show considerable accuracy and good precision, and have reasonable selectivity. The goals of this research would not have been accomplished without achievement of a good deal of experiments on the complexation reactions upon which the proposed methods are based. Thus, an insight into the complex-forming equilibria and analytical characteristics of the complexation reactions is given. Further, an attempt is performed to ascertain the reliability of a spectrophotometric procedure and to determine if the analysis is under statistical control using control charts.

The reagents purpurin and quinizarin are chosen as potential chelating agents. The selections which have been made with respect to the working conditions in the present project, are achieved in order to obtain fundamental information about possible equilibria set in solution and analytical aspects of the reactions involved.

The present study is undertaken, hopefully, to cover the subject of interest and to present some thorough work on direct spectrophotometric determination of manganese oxide, magnesia and alumina in portland cement. In any case, here it is for the benefit of any one who would like to make use of it.

The thesis comprises three main chapters: