DETERMINATION AND ASSESSMENT OF DOSIMETRIC CHARACTERISTICS OF SOME CHEMICAL COMPOUNDS

A Thesis Submitted By

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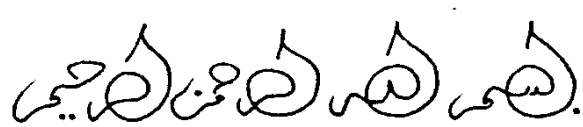

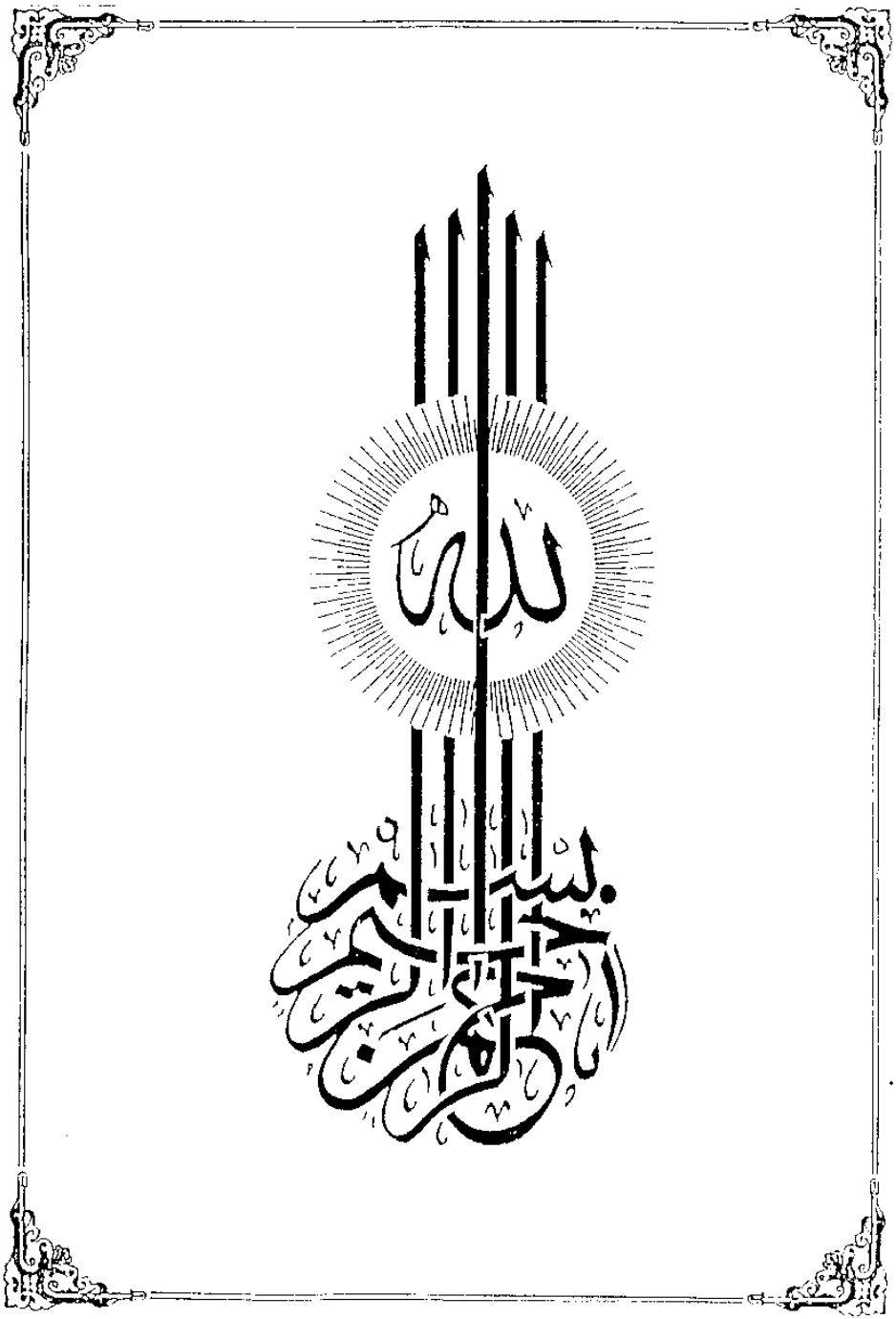

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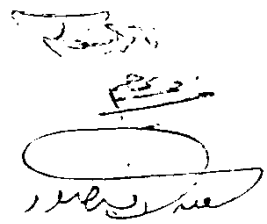

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LIST OF PUBLICATION

List of Publication

(Ph. D. Thesis)

1- EVALUATION OF COMMERCIAL RED-DYED PLASTIC FILM FOR GAMMA-RADIATION MONITORING.

F. Abdel-Rehim, F. Soliman, S. Ebrahim, N. Souka.

Int. J. Appl. Radiat. Isotopes. (41), No.7,p 700-704 (1991)

2- A NEW LABEL DOSIMETRY SYSTEM.

F. Abdel-Rehim, S. Ebrahim, N. Souka.

Radiat. Phy. Chem. (39), p 191 (1992)

AIM OF THE WORK

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The development of radiation processing of commercial products; used for sterilizing medical devices, treating municipal wastes, processing industrial goods and food preservation; has become quite significant in Egypt. One of the most useful radiation processing plants (Mega-Gamma I) has been installed and in current use since 1979 at the National Center for Radiation Research and Technology (NCRRT), Cairo. It is mainly used for sterilization of medical and surgical devices.

Quality control of such radiation processes depends largely on maintaining measurements through a routine dosimeters. The need for dosimetry and development of local dosimeters and labels have been emphasized by all NCRRT programmers, which are based on the national as well as economical aspects.

In the other hand, the today environmental case is the decrease of ozone layer areas which lead to increase the ultraviolet radiation level on the Earth surface. This increase of ultraviolet radiation is very harmful for the human live, it has many biological defects and cause many damage in the planets kingdom.

The main purpose of the present work is to make a detailed study of the evaluation and assessment of the dosimetric characteristics of some plastic films, locally available on commercial scale in the Egyptian market, or developed in the laboratory, can be used for radiation processing quality control, and ultraviolet radiation measurements.

The Topics of Research Program:

1- Assessment of The Dosimetric Characteristics of The Newly Developed Labels.
2- Evaluation of Commercial Red-Dyed Plastic Film for Gamma-Radiation Monitoring.
3- Evaluation of Commercial Blue-Dyed Plastic Film for Gamma Radiation Monitoring.
4- Development of a Thin-Film Radiation Monitoring Label and Dosimetry System.
5- Dosimetry for Radiation Processing Control.
6- Evaluation of a New Radiochromic Dye Film For Ultraviolet Radiation Measurement.
7- Evaluation of Radiochromic Dye Film Dosimeter (FWT-60-00) for Ultraviolet Radiation Measuerments.
8- Evaluation of Blue- Tinted Film for Ultraviolet Radiation Measurement.

This research involves a new effort to find suitable practical film dosimeters for the high doses, dose rates and temperature encountered in radiation processing plant. Developing and testing of new polymeric systems are necessary in extending the response ranges for dosimetry and improving accuracy and precision. The study should be extended to investigate in detail the variation of response of these films under various environmental conditions (e.g. temperature, light, relative humidity, etc.) both during irradiation and during storage.

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