Ain Shams University
Faculty of Science

DEVELOPMENT OF NUCLEAR TECHNIQUES FOR LANDMINE DETECTION AND ILLICIT MATERIALS

Thesis
In Partial Fulfillment of the Requirements of the Degree of Ph.D. in Physics

BY

AHMED MAHMOUD OSMAN ABDOH

Under Supervision of

Prof. Dr. Samir Usha El-Kameesy
Faculty of Science, Ain Shams University

Prof. Dr. Riad Mostafa Megahid
Nuclear Research Centre, Atomic Energy Authority

Dr. Salh Mohammed Metwally
Faculty of Science, Ain Shams University

Dr. Wagdy Ahmed Kansouh
Nuclear Research Centre, Atomic Energy Authority

Physics Department,
Faculty of Science
Ain Shams University
Cairo, Egypt
2009

APPROVAL SHEET

Title of the Ph.D. Thesis

DEVELOPMENT OF NUCLEAR TECHNIQUES FOR LANDMINE DETECTION AND ILLICIT MATERIALS

Name of the candidate

AHMED MAHMOUD OSMAN ABDOH

Supervisors: **(signature)**

Prof. Dr. Samir Usha El-Kameesy (……………….)
Faculty of Science,
Ain Shams University

Prof. Dr. Riad Mostafa Megahid (……………….)
Nuclear Research Centre,
Atomic Energy Authority

Dr. Salh Mohammed Metwally (……………….)
Faculty of Science,
Ain Shams University

Dr. Wagdy Ahmed Kansouh (……………….)
Nuclear Research Centre,
Atomic Energy Authority

Ain Shams University
Faculty of Science

Name: **Ahmed Mahmoud Osman Abdoh**

Degree: **Ph.D.**

Department: **Physics**

Faculty: **Science**

University: **Ain Shams**

Graduation Date: **2001-El-Azhar university**

Registration Date: **15/1/2007**

Grant Date: **2009**

Dedication

This work is gratefully dedicated to

My Father

My Mother

My wife

My Son

My Daughter

Author

Ahmed Mahmoud Osman

Table of Contents

Chapter Three
Nuclear Technologies for Detection of Landmine and Illicit materials

Chapter Four
Installed Combined Systems and Measuring Procedures

Chapter Five
Results and Discussion

Chapter Six
Conclusions and Recommendations

Appendices

List of Figures