

الآية

قال الله تعالى:

(وَقُلِ اعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ وَسَتُرَدُّونَ إِلَىٰ عَالَمِ الْغَيْبِ
وَالشَّهَادَةِ فَيُنبِّئُكُمْ بِمَا كُنْتُمْ تَعْمَلُونَ) (103)

سورة التوبة

صدق الله العظيم

Dedication

I dedicate this research to, my mother, my father, my Family, my brothers and sisters and all my friends.

Acknowledgment

I would like to express my gratitude to Sudan University and Technology, Graduated College, Faculty of Science and Department of physics for research facilities and encouragement. I indebted to many people for their ideas and assistance. Primary thanks to the many academic who have advanced our knowledge of physics .I would like to thanks all the reviewers and colleagues who have worked closely with me. Extend my special thanks for my Special thank for my supervisor: Associate Prof. Rawia Abdelgani Elobaid Mohammed and my Co.-Supervisor Professor: Mubarak Dirar Abdulla for invaluable help and truthful suggestion. My thanks for my father for his supporting and help me greatly by supplements. My husband who took charges of this project and directed it across the finish line.

Abstract

In this research the carbon Nanotubes were doped by TiO_2 , MgO , CuO and ZnO , such that four samples from each metal oxide were prepared at different annealing temperatures (450,500,550 and 600) $^\circ\text{C}$. The optical properties like absorption coefficient and refractive index were studied using ultra violet spectrometer. The electrical properties like conductivity and dielectric constant were also investigated by using software program. The temperature increase decrease the absorption coefficient TiO_2 and CuO and for ZnO and MgO while it increase with temperature decrease the conductivity and the dielectric constant for TiO_2 , CuO and ZnO , while it increase them for MgO to briefed. These results were explained theoretically.

المستخلص

في هذا البحث شُوتبت الانابيب الكاربونانوية المطعمة بـ $\text{Tio}_2, \text{Mgo}, \text{Cuo}, \text{Zno}$ بحيثُ حضرت اربعة عينات من كل اوكسيد معدن عند درجات حرارة مختلفة هي $(450, 500, 550, \text{and } 600)^\circ\text{C}$.
دُرست الخواص الضوئية مثل معامل الامتصاص والانكسار باستخدام مطياف الاشعة فوق البنفسجية ودُرست الخواص الكهربائية ايضا" مثل الموصلية وثابت العزل باستخدام برمجيات حاسوبية حيث اتضح ان زيادة درجة الحرارة تقلل معامل الامتصاص لـ Tio_2, Cuo وتزيده لـ Zno, Mgo .
اما معامل الانكسار فينقص بزيادة درجة الحرارة لـ $\text{Tio}_2, \text{Cuo}, \text{Zno}$ في حين تزيد مع درجة الحرارة مع Mgo وتؤدي زيادة درجة الحرارة الي نقصان الموصلية وثابت العزل لـ $\text{Tio}_2, \text{Cuo}, \text{Zno}$ في حين تزيد لـ Mgo . وقد تم تفسير هذه النتائج نظريا".

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