AIN SHAMS UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF CHEMISTRY

Radiation Modification of Some Cellulosic Materials and Their Potential Applications

THSESIS
SUBMITTED TO
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BY

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"قالُواْ سُبْحَانَكَ لاَعِلْمَ لَنَا إلاَّ مَا عَلَّمْتَنَا

إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيم"

(سورة البقرة)

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Radiation modification of some cellulosic materials and their potential applications

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AIN SHAMS UNIVERSITY
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Dedication

Special Dedication

With my deepest gratitude and warmest affection,

I dedicate my thesis to the persons I believe they touched my life, inspired and encouraged me

through my journey

To the Soul of My beloved Parents

To my cherished Husband

To my sweet children

& last not least to my Caring siblings

Thank You

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AIM OF WORK

Heavy metals have been excessively released into the environment due to rapid industrialization and have created a major global concern. Heavy metal pollution can cause serious environmental problems due to its toxic and carcinogenic effects on the natural environment and its accumulation in living organisms .The toxicity of heavy metals might be caused by blocking essential functional groups of bio molecules and by disrupting the integrity of bio-membranes.The most common hazardous metals found in industrial wastewater are Cu, Cd, Pb, Ni, Fe, Cr, and Zn. Also many industries viz. textile, paper, plastics and dyestuffs production consume substantial volume of water and dyes during manufacturing of their products. These dyes might cause allergic dermatitis and skin irritation. Moreover, it have been reported that some dyes have a toxic effect and they are turned to be carcinogenic and mutagenic for both aquatic life and human beings. On these bases, the present work was concerned with the purification of the wastewater from some heavy metal ions and dyes pollutants by using treated cellulosic materials (Jute and cotton fibers) as low cost and biodegradable applicant plus being easily regenerated. Characterization of treated Jute and cotton fibers by using FTIR, XRD, SEM, TGA and mechanical measurements were undertaken to stand on the main modification aspects. Studying of the factors which affect the adsorption process