

AIN SHAMS UNIVERSITY
INSTITUTE OF ENVIRONMENTAL STUDIES
AND RESEARCH

THESIS
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**Studies on Pollution due to Black Liquor
of Pulp and Paper Mills and Possibility of
Recycling Its Main Constitutents.**

Presented by

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For M.Sc. Degree
Environmental Studies and Research



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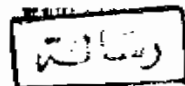
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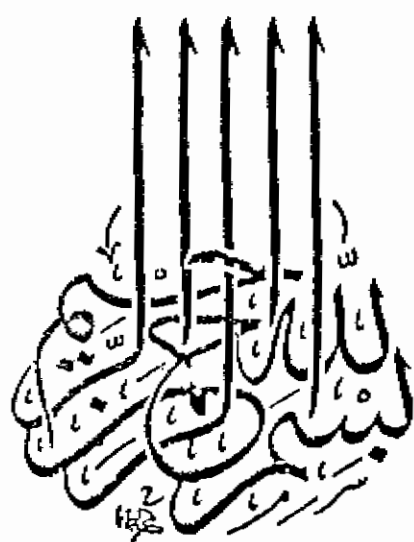
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بسم الله الرحمن الرحيم

إهداء

إلى أستاذى الجليل الأستاذ الدكتور أحمد نجاتى

الذى بارحنا إلى عالم البقاء والخلود ..

أهدى هذه الرسالة العلمية وفاءً وإعترافاً بفضل أستاذى العالم وما بذله فيها من جهد إشرافاً علىّ و توجيهاً لى، ومساهمة فعالة فى التجارب العلمية والمعملية التى حوتها، واستباطاً للنتائج الطيبة التى وصلت إليها، ورغبة صادقة فى توجيه العلم لخدمة البشرية واستخلاص الخير والفائدة لبلدنا العزيز مصر بتحويل السائل الأسود " موضوع الرسالة " من سائل ذى أذى بالغ الخطورة على البيئة والناس إلى خير وفير وفائدة تعم المجتمع وتضيف جديداً إلى العلم.

ولا أنس ما حييت جهذك أستاذى الجليل ووقوفك إلى جانبى تشرف على التجارب بنظرة العالم وفى صبر لا ينفد وتصميمك للأجهزة الخاصة بالتجارب وأشرافك على تنفيذها وأصرارك على إعادة التجربة مراراً حتى تصل إلى النتائج المرجوة، ثم إسهامك فى كتابة وأعداد هذه الرسالة. كل ذلك يصدر منك إستاذى الجليل فى أبهى حانيه حازمه وتواضع جم، وخلق عظيم ونبييل .

إليك أستاذى الجليل إهدى هذه الرسالة العلمية التى كانت ختام أعمالك وقطره فى بحر علمك لتضاف إلى تاريخك العلمى المشرف وسجل أعمالك وأسهاماتك العظيمة فى البحث العلمى . ويذكرها لك زملاؤك وأبناءك وتلاميذك ..

جزاك الله خيراً لما قدمت للعلم وللمصر .

صها

بسم الله الرحمن الرحيم

قالوا

سبحانك

لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنْتَ الْحَلِيمُ الْحَكِيمُ

صدق الله العظيم

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INTRODUCTION

Part I