بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

South Valley University
Faculty of Science, Sohag

PREPARATION AND CHARACTERIZATION OF INTRINSICALLY CONDUCTING POLYPYRROLE POLYMERS FOR APPLICATION AS ION SENSITIVE FILMS

A THESIS

Submitted to the Faculty of Science (Sohag)
South Valley University

For The Degree of Philosophy Doctor of Science
(Chemisty)

BY
Mohamed M. El-Dessouki Mahmoud
M.Sc. Chemistry

1419-1998

South Valley University
Faculty of Science, Sohag

Approval Sheet

Name: *Mohammed M. El-Dessouki*

Title : **Preparation and Characterization of Intrinsically Polypyrrole Polymers for Application as Ion Sensitive Films**

Supervisors	*Approved*
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2- Prof. Wladfried Plieth	.....
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Vice - Dean For Graduate
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To

My Family

Candidate: Mohamed M. El-Dessouki Mahmoud

Title : Preparation and Characterization of Intrinsically Conducting Polypyrrole Polymers for Application as Ion Sensitive Films

Abstract: The electrochemical synthesis of polypyrrole polymer films with different size dopant anions was carried out onto gold electrode from aqueous solution by cyclic voltammetry. The electrochemical properties depend strongly on the dopant anion size. The electrochemical impedance spectroscopy shows that the reduced polypyrrle polymer film is a p-type semiconductor with small size dopant anions. On incorporation with large size anions the polymer behaves as an ionic conductor. On the other hand, in case of the medium sized dopant anions, the semiconducting properties in reduced state are limited according to the size of the co-ion. The photoelectrochemical results, evident that the polypyrrole polymer film has a photocurrent activity on doping with small and medium sized anions while with large sized anions the activity is lost. The mechanism of anion and/or cation insertion during the reduction process in aqueous solution was confirmed by EDAX measurements. The application of the polypyrrole-based electrode in the electroanalytical determination of anions and cations in aqueous solution was investigated using the stripping voltammetric method. The voltammetric response of the polypyrrole-based electrode depends on the ionic size and the ionic charge of the analyte.

Key Words: Synthesis, Polypyrrole, Impedance spectroscopy, Photocurrent, dopant anions, ion sensitive films, Voltammetry.

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