Dedication

To everyone loves me and pray for me
In this world
To my beloved
Mother
Father
To my kids
&
Friends
And before all I dedicate this work to my husband
And every person who helped me to finish it.

Acknowledgement

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Abstract

In this research 7on polymer solar cells Were fabricated to determine their efficiency and energy gaps The polymer was deposited solution on the ITO glass was are deposited with concentration of ITO , and deposited another layer of dye concentration was are deposited with concentration of ITO , 3 mg in 1 mL of ethanol and making the electrode is made from silver "anode" ,ITO glass represent the "cathode" . The area of all cells equal 0.26 cm^2. Absorbance was measured dye for (Rohdamin B, Coumarin 500, Lawsonia ,Blue 8GX , Roselle, DDTTC and Ero-Chrom black T) and polymer (MEH-PPV) with UV-Ultra violet device were found Spectra the energy gaps and levels were determined .The relation between current and voltage was displayed also and the fill factor and efficiency of cells. . Based on transmittance and photoluminescence., the composition and the morphology of the samples were investigated using the X-ray diffraction analysis and field emission scanning electron microscopy.

The energy Levels and energy gaps for Semiconductors, doner. And acceptors In polymer Solar Cells Were found four polymer doped with Coumarin, Lawsonia, Rohdamin B, Blue 8GX, Roselle, DDTTC and Ero-Chrom black, by means of the values of absorption and transmission spectra, beside values of absorption coefficient-intensity relations of them. The results obtained for shows that the absorption spectra which relates intensity and emitted wave lengths for them gives the values of donor and acceptor levels which are 5.07 , 4.41 , 5.08 5.12 4.57 4.88 5.54 respectively 2.43 2.25 2.45 2.84 2.32 , 2.41 2.33 respectively. The transmission spectra for Coumarin, Lawsonia, Rohdamin B, Blue 8GX, Roselle, DDTTC and Ero-Chrom black is closely related to their energy gaps which were found to be these values are in conformity with the results obtained by the absorption coefficient - intensity relations which

predicts the energy gaps , and which are in agreement with the standard values .The efficiencies of these cells , were found to be Strongly dependent on the width of energy gaps and energy gaps and energy Levels Locations

ملخص البحث

في هذا البحث صنعت عدد 7 خلايا شمسية بوليمرية وحسبت كفاءتها وفجوة الطاقة . تم بناء هذه الخلايا عن طريق بوليمر MEH-PPV بتركيز 10 ملى جرام في 0.5 مول من الكلورفوم علي شريحة ITO ورسبت طبقة أخري من ألاصباغ الآتية (Blue, Lawsonia ,Coumarin 500 ,Rohdamin B, Roselle, DDTTC and Ero-Chrom black T , 8GX) بتركيز 3 ملي جرام من الصبغة مذابة في 1 ملي ليتر من الإيثانول حيث يمثل ITO القطب السالب للخلية وتمت إضافة الفضة لتمثل القطب الموجب للخلية الشمسية . مساحة الخلية الواحدة 0.26 سم ^{2} .حسب الامتصاصية للخلايا بواسطة جهاز UV الأشعة فوق البنفسجية لحساب فجوة الطاقة . من علاقة الجهد والتيار حسب معامل الملئ والكفاءة للخلايا. ولدراسة التركيب البنيوي للخلايا استخدم جهاز حيود الأشعة السينية والتصوير بالمجهر الإلكتروني .

مستويات الطاقة وفجوة الطاقة لأشباه الموصلات (المانحات والمستقبلات) للخلايا البوليمرية حسبت عن طريق النسبة بين كفاءة طيف الامتصاص والنفاذية للأطوال الموجية للأصباغ (Rohdamin B, Coumarin 500, Lawsonia ,Blue 8GX , Roselle, DDTTC and Ero-Chrom black T) بالقيم التالية (5.54 4.88 4.57 5.12 5.08 , 4.41 , 5.07) للمانحات مقابل (2.84 2.45 2.25 2.43 2.33 2.41 , 2.32) للمستقبلات .

طيف الامتصاص للإصباغ مقابل فجوة الطاقة هي متوافقة مع معاير الامتصاص للخلايا الشمسية ما أعطي هذه الخلايا كفاءة جيدة وجعل استخدام هذه الخلايا في مستوي واسع في نطاق الطيف