



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Sudan University of Science and Technology  
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# Effect of Solar Radiation Intensity and Temperature on the Efficiency of the Solar Cell

دراسة تأثير شدة الاشعاع الشمسي ودرجة الحرارة علي كفاءة  
الخلية الشمسية

A thesis submitted for the partial fulfillment of the  
requirements of M.Sc. degree in Physics

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## **Abstract**

This study discusses the effect of the intensity of solar radiation and the temperature on the efficiency of the solar cell, and the study included five results at different times during the day, and both the intensity of solar radiation and the temperature were measured after connecting the solar panel and taking the readings of both voltmeter and current. Based on this, we concluded that the efficiency of the solar cell increases with the increase in the intensity of solar radiation and the temperature and decreases with the decrease in the intensity of solar radiation and the temperature and we conclude from this that the more the sun is at its peak, the efficiency of the solar cell is at its highest value.

## المستخلص

تناقش هذه الدراسة تأثير شدة الأشعاع الشمسي ودرجة الحرارة علي كفاءة الخلية الشمسيه ،وشملت الدراسة علي خمسہ نتائج في أوقات مختلفه خلال النهار، وتم قياس كل من شدة الأشعاع الشمسي ودرجة الحرارة بعد توصيل اللوح الشمسي وأخذ قراءات كل من الفولتميتر والتيار.استخدم البحث طريقة المنهج التجريبي وأستنادا إلي ذلك توصلنا إلي أن كفاءة الخلية الشمسيه تزيد بزيادة شدة الأشعاع الشمسي ودرجة الحرارة وتنقص بنقصان شدة الأشعاع الشمسي ودرجة الحرارة ونستنتج من ذلك أنه كلما كانت الشمس في قمة زروتها تكون كفاءة الخلية الشمسيه عند أعلى قيمه لها.

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