

**DESIGN AND STUDY THE EFFECT OF CONTACT AREA ON GaAs
SOLAR CELL BY SIMULATION**



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Sekian, terima kasih.

Yang benar,

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ABSTRACT

Photovoltaics is a renewable energy technology that converts the sunlight directly into electricity through a photovoltaic (PVs) cell, commonly called a solar cell. Basically, they are made from semiconductor material such as silicon, gallium arsenide, amorphous and many more semiconductors. Photovoltaic energy has become popular nowadays because of its ability to provide nearly permanent, uninterrupted power. What is more interesting, there is no operating cost. However, disadvantage lie in the low power per unit area of sunlight, which necessitates a large area of arrays. The performance of a photovoltaic array is dependent upon the intensity of the sunlight and also the material used for the solar cell device itself. Two main parameters in solar cell technology are the contact to the cell and the use of anti-reflective coating (AR coating), which are of capital importance in the improvement of the efficiency of semiconductor solar cells [1]. However, this project give the focus on contact area parameter in attaining high efficiency of solar cell. Two types of solar cells were designed by using Silvaco Atlas device simulator. They were single junction (GaAs) solar cells and multi junction (GaAs-AlGaAs) solar cells. ATLAS device simulator by Silvaco International was introduced for used as a tool in modeling solar cell. This project was conducted only to design and simulate both solar cell based on virtual fabrication but not involves real fabrication. This ATLAS simulator extracts the