

Abstract Submitted
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A new model for extracting the physical parameters from I-V curves of organic and inorganic solar cells NADIA NEHAOUA, YAHIA CHERGUI, DJAMEL EDDINE MEKKI, Physics Department, LESIMS laboratory, Badji Mokhtar University, Annaba, Algeria — Computer simulation is an important tool for investigating the behaviour of solar cell devices and for optimising their performance. So, an accurate extraction and optimization of solar cells and solar panel parameters are very important in improving the device quality during fabrication and in device modelling and simulation. In this paper, a new method for extracting parameters (series resistance R_s , shunt resistance G_{sh} , ideality factor n , saturation current I_s and photocurrent I_{ph}) value is proposed. The proposed method deduces the characteristics curve of an ideal solar cell using the current-voltage characteristics curve measured and reported by solar cell manufacturers and calculates the difference between the deduced and actual measured curves. The method has been successfully applied to organic and inorganic solar cells under different condition of temperature and illumination. In addition, the precision of the proposed method is demonstrated by calculating the correlation between the I-V characteristics curve based on modelling parameters and the I-V curve actually measured employing a numerical method and we compare the extracted values with the experimental results and the calculated values obtained by other methods for proving its significance.

Nadia Nehaoua
Badji Mokhtar University, Annaba, Algeria

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