World Academy of Science, Engineering and Technology
International Journal of Energy and Power Engineering
Vol:17, No:12, 2023

Improved Photo-Active Layer Properties for Efficient Organic Solar Cells

Authors : Chahrazed Bendenia, Souhila Bendenia, Samia Moulebhar, Hanaa Merad-Dib, Sarra Merabet, Sid Ahmed Khantar, Baghdad Hadri

Abstract : In recent years, organic solar cells (OSCs) have become the fundamental concern of researchers thanks to their advantages in terms of flexibility, manufacturing processes and low cost. The performance of these devices is influenced by various factors, such as the layers introduced in the stacking of the solar cell realized. In our work, the modeling of a reverse OSC under AM1.5G illumination will be determined. The photo-active polymer/fullerene layer will be analyzed from the polymer variation of this layer using the SCAPS simulator to extract the J-V characteristics: open circuit voltage (Voc), short circuit current (Jsc), filling factor (FF) and power conversion efficiency (η). The results obtained indicated that the materials used have a significant impact on improving the photovoltaic parameters of the devices studied.

Keywords : solar, polymer, simulator, characteristics
Conference Title : ICSEFA 2023 : International Conference on Solar Energy Forecasting and Applications
Conference Location : Paris, France
Conference Dates : December 25-26, 2023