



Investigation of a new method to study solar cell characteristics

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Analysis of I-V characteristics with modeling concepts contribute greatly to the future of solar cell industry. Experimental I-V data of solar cells together with two diode model were used for investigations. Solar cells were modelled according to the two diode model by using PC1D software. The light and dark current curves were obtained and curves were fitted with the experimental data. Cell parameters that describe the behaviour of I-V data were extracted. It was found that the fitted curves for the dark current using the PC1D software were not successful. Therefore the extracted cell parameters were not accurate. Since the cell parameters describe the efficiency losses, inexactness of cell parameters lead the researchers in a wrong direction. As a solution, a new programme was created by using Root (an object oriented data analysis frame work) and solar cell parameters such as diode ideality factors, saturation currents and series and shunt resistances were extracted from fitting with the new programme. Finally, the fitted curves using the PC1D and the newly created programme were compared. It can be concluded that the new programme is a successful alternative to study solar cell characteristics accurately and efficiently.

Keywords: I-V characteristics, PC1D, modeling