

## Simulation of Carbon Nanotubes/GaAs Hybrid PV Using AMPS-1D

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**Abstract :** The performance and characteristics of a hybrid heterojunction single-walled carbon nanotube and GaAs solar cell is modelled and numerically simulated using AMPS-1D device simulation tool. The device physics and performance parameters with different junction parameters are analysed. The results suggest that the open-circuit voltage changes very slightly by changing the work function, acceptor and donor density while the other electrical parameters reach to an optimum value. Increasing the concentration of a discrete defect density in the absorber layer decreases the electrical parameters. The current-voltage characteristics, quantum efficiency, band gap and thickness variation of the photovoltaic response will be quantitatively considered.

**Keywords :** carbon nanotube, GaAs, hybrid solar cell, AMPS-1D modelling

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