

Antireflection Coating influences on the Quantum Efficiency and the Reflectivity of a GaAs / GaAS Solar Cell within the Visible Spectrum

A theoretical investigation of the change in reflectance of silicon carbide (SiC) as a function of the particle size was the main focus of the current research. In addition, a single layer of anti-reflection coating of a quarter the wavelength is designed and doped in gallium arsenide (GaAs/GaAs) solar cell. The efficiency of the cell is investigated in the range of (400-700 nm) using the Brus model and the theory of characteristic matrix in the case of vertical and 45° ray to the plane of the incidence. The max efficiency for the designed cell (Air/Nano SiC/(GaAs/GaAs) was (% 96.81) of the wavelength of 550 nm in the case of vertical incidence. While in the case of an incident ray of 45° to the plane of the incidence, the efficiency was (%92.99) for the perpendicular polarisation (S) and (%97.23) in the case of horizontal polarization (P). the thickness of the coating was (Ps=2.2 nm).