SYSTEM AND METHOD FOR MANAGING THE POWER OUTPUT OF A PHOTOVOLTAIC CELL

ABSTRACT

A solar cell management system for increasing the efficiency and power output of a solar cell and methods for making and using the same. The management system provides an electric field across an individual solar cell, an array of solar cells configured as a panel, or a group of solar panels. The imposed electric field exerts a force on both the electrons and holes created by light incident on the solar cell and accelerates the electron-hole pairs towards the electrodes of the solar cell. Compared to conventional solar cells, these accelerated electron-hole pairs travel a shorter distance from creation (by incident optical radiation) and spend less time within the solar cell material, therefore the electron-hole pairs have a lower likelihood of recombining within the cells' semiconductor's material. This reduction in the electron-hole recombination rate results in an overall increase in the solar cells' efficiency and greater power output.

Fig. 4