



PHOTONIC BANDGAP SOLAR CELLS

INTRODUCTION

A need for solar panel cells that have increased efficiency for photocurrent generation is rapidly increasing in need. It is desirable that UV and IR radiation either be reflected by the solar panel cells to avoid damage to the structure or absorbed in materials having the appropriate band gaps to convert the radiation in photocurrent. It is also desired that the efficiency of the current generation process be equally high for all possible incidence angles of the radiation upon the solar panel. Current solar panel technology uses tracking devices to overcome this issue.

CONCEPT

A photovoltaic cell having multiple stacked layers has a thickness from the top of its top layer to the bottom of its bottom layer of less than one micron. Metal conducting layers are positioned between semiconductor layers with semiconductor layers having higher bandgaps being located above semiconductor layers having lower band gaps. The layers of the photovoltaic cell are arranged and stacked, and the thicknesses and materials for the semiconductor layers and conductive layers are selected to realize desired absorption, transmission, and reflection characteristics. The geometry and thicknesses of the respective layers of the cell allows incident light of various angles to be absorbed by all of the semiconductor layers of the cell.

cell for use in a solar cell panel includes: a plurality of layers of a first material having a first thickness and a first optical characteristic; a plurality of layers of a second material having a second thickness and a second optical characteristic; each of the plurality of layers of the first material adjacent to two of the plurality of layers of the second material, wherein the second material includes a metal.

- Reduced power consumption.
- U.S. Patent Number: 8,993,974 B2
- Application Number: 13/24248716
- Date of Patent: 31 Mar 2015

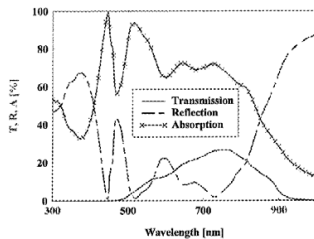
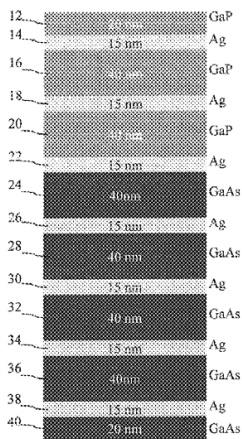
POTENTIAL MARKET

- Solar Power Industries

DOING BUSINESS WITH CCDC AVIATION & MISSILE CENTER

CCDC Aviation & Missile Center is a leader in partnering with domestic firms. Successfully developed and implemented innovative tools to ease the technology transfer process such as:

- Patent License Agreements
- Cooperative Research and Development Agreements
- Test Services Agreements



INVENTION OVERVIEW

According to embodiments disclosed herein a photovoltaic

FOR FURTHER INFORMATION:

U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT
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