

Ab-Initio Study Of Cdte/Znte Heterojunctions And Their Applications In Photovoltaics

Abstract

In light of the global trend toward developing and diversifying more efficient and sustainable renewable energy sources, researchers are working to develop innovative technologies that combine advanced nanomaterial engineering and energy production. This research focuses on improving the performance of photovoltaic cells by introducing innovative strategies, including the use of CdTe/ZnTe heterojunction semiconductors as thin layers in photovoltaic cells. These layers are directly manufactured using the sol-gel method. To design the upper layers of cells to reduce light reflection and increase absorption, leading to increased cell efficiency, this work presents a multidisciplinary approach that combines materials engineering and renewable energy technology, with the goal of achieving more efficient, environmentally friendly, and low-cost solar cells.

KEY WORDS

Introduction ; CdTe/ZnTe ; photovoltaic ; solar cells ; heterojunction ; semiconductors