



Access provided by:
NASA Langley Research Center
Sign Out



Browse Conference Publications > Photovoltaic Energy Conversio ...

Nanostructured materials for solar cells

This paper appears in:

Photovoltaic Energy Conversion, 2003. Proceedings of 3rd World Conference on

Date of Conference: 18-18 May 2003

Author(s): Bailey, S.G.

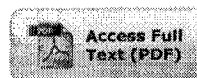
NASA Glenn Res. Center, Cleveland, OH, USA

Castro, S.L. ; Raffaele, R.P. ; Fahey, S. ; Gennett, T. ; Tin, P.

Volume: 3

Page(s): 2690 - 2693 Vol.3

Product Type: Conference Publications



ABSTRACT

The use of both inorganic and organic nanostructured materials in producing high efficiency photovoltaics is discussed in this paper. Recent theoretical results indicate that dramatic improvements in device efficiency may be attainable through the use of semiconductor quantum dots in an ordinary p-i-n solar cell. In addition, it has also recently been demonstrated that quantum dots can also be used to improve conversion efficiencies in polymeric thin film solar cells. A similar improvement in these types of cells has also been observed by employing single wall carbon nanotubes. This relatively new carbon allotrope may assist both in the disassociation of excitons as well as carrier transport through the composite material. This paper reviews the efforts that are currently underway to produce and characterize these nanoscale materials and to exploit their unique properties.

INDEX TERMS

• INSPEC

◦ Controlled Indexing

II-VI semiconductors , cadmium compounds , carbon nanotubes , carrier mobility , composite materials , copper compounds , dissociation , excitons , indium compounds , nanostructured materials , nanotube devices , photovoltaic effects , polymer films , semiconductor quantum dots , solar cells , ternary semiconductors

◦ Non Controlled Indexing

C , CdSe , CuInS/sub 2/ , carbon allotrope , carrier transport , composite material , disassociation , exciton disassociation , excitons , nanostructured materials , p-i-n solar cell , photovoltaic effect , polymeric thin film solar cells , semiconductor quantum dots , single wall carbon nanotube

Additional Details

On page(s): 2690

Conference Location : Osaka, Japan

Print ISBN: 4-9901816-0-3

INSPEC Accession Number: 8047718

Date of Current Version : 28 June 2004

Issue Date : 18-18 May 2003

Sign In | Create Account

IEEE Account

Change Username/Password

Update Address

Purchase Details

Payment Options

Order History

Access Purchased Documents

Profile Information

Communications Preferences

Profession and Education

Technical Interests

Need Help?

US & Canada: +1 800 678 4333

Worldwide: +1 732 981 0060

Contact & Support

About IEEE Xplore | Contact | Help | Terms of Use | Nondiscrimination Policy | Site Map | Privacy & Opting Out of Cookies

A non-profit organization, IEEE is the world's largest professional association for the advancement of technology.
© Copyright 2012 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.