+44 20 8123 2220
info@marketpublishers.com

Flexible Thin-Film Solar Cell Technology and Market Forecast (2006~2015)

https://marketpublishers.com/r/F612065D2E6EN.html
Date: January 2011
Pages: 517
Price: US$ 3,990.00 (Single User License)
ID: F612065D2E6EN

Abstracts

Photovoltaic business has rapidly been increased until first half of 2008 and each country has started to foster PV business as the next-generation growth industry. However, PV market has become highly competitive because of plunge in module price caused by global economic recession. Solar cell.module makers face the challenges for improving product efficiency and reducing manufacturing cost.

As manufacturing cost and need for various products come to the fore, researches on flexible solar cell are currently conducted. Most of already commercialized solar cells can be broken or changed its shape with some forces because it is produced on the solid substrate such as wafer or glass. However, flexible solar cell that now captures attentions as the next-generation solar cell can be bent as you please. Therefore, flexible solar cell is light, portable and able to be modified easily because thin-film features are used for flexibility.

If the flexible substrate is produced with the strengths of flexible solar cell and the technology for flexible substrate is optimized, flexible solar cells compete with already commercialized solar cells and those are used for various purposes.

Flexible a-Si solar cell market has been led by Uni-Solar until 2009 and its market has grown with new CIGS and other flexible solar cell manufacturers. It is expected that the CIGS and other flexible solar cell makers adopt advanced technology and increase in production from 2011, led by current a-Si solar cell maker, showing annual 52.2% growth rate during 2011~2015. The production is expected to be increased to 343.2MW in 2011 and up to 1,732.2MW in 2015.

In case of CIGS solar cell, most makers have entered to mass-production stage. Even

+44 20 8123 2220
info@marketpublishers.com

though they produce in small-scale, the CIGS market share has grown up to 31.7%, increasing about 30% compare with previous year. Typically, Global Solar(Metal Foil), MiaSole(Metal Foil), Odersun(Metal Foil) and Ascent Solar(Plastic) produce in small-scale. DY metal (Metal Foil) of Korea stocks the equipment in the beginning of 2011 and is scheduled to start mass-production from the second half of this year. In particular, many manufacturers enter flexible CIGS solar cell market because of high potential of high efficiency solar cell as much as CIGS solar cell with glass substrate and in the future, other many manufacturers are expected to enter into this area.

This report will provide followings about flexible solar cell technology and market forecast.

The elements and characteristics of flexible solar cell substrate/technology

The current state of technologies and development by each flexible solar cells

The current state of research and commercialization by domestic/foreign solar cell manufacturers

Flexible Solar cell Market Forecast

+44 20 8123 2220
info@marketpublishers.com

Contents

1. INTRODUCTION OF SOLAR CELL

1.1. Vision of Photovoltaic Power Generation
1.2. Technology by Solar cell Types
  1.2.1. Crystalline Si Solar cell
  1.2.2. Thin-film a-Si Solar cell
    1.2.2.1. Manufacturing technology
    1.2.2.2. Single, Tandem, Triple junction Solar cell
  1.2.3. CIGS Thin-film Solar cell
  1.2.4. CdTe Thin-film Solar cell
  1.2.5. Dye-Sensitized Solar Cell (DSSC)
  1.2.6. Organic Solar cell
  1.2.7. Comparison of efficiency characteristics by Thin-film solar cells
  1.2.8. Development trend by Thin-film solar cell
1.3. Flexible Solar cell Development
  1.3.1. Flexible a-Si Solar cell module
  1.3.2. Flexible CIGS Solar cell module
  1.3.3. Plastic Solar cell
  1.3.4. Flexible Dye-sensitized Solar cell

2. CORE TECHNOLOGY FOR FLEXIBLE SOLAR CELL

2.1. Substrate Technology of Flexible Solar cell
  2.1.1. Requirements for Flexible Solar cell
    2.1.1.1. Thermal Stability
    2.1.1.2. Coefficient of Thermal Expansion: CTE)
    2.1.1.3. Gas Barrier
    2.1.1.4. Flexibility & Durability
    2.1.1.5. Optical Transmission
  2.1.2. Characteristics by Plastic/Polymer Substrate Types
    2.1.2.1. PC (Poly Carbonate)
    2.1.2.2. PET (Polyethylene terephthalate)
    2.1.2.3. PES (Polyether Sulfone)
    2.1.2.4. PEN (Polyethylene Naphthalate)
    2.1.2.5. PI (Polyimide)
    2.1.2.6 COC (Cyclic Olefin Copolymers)
    2.1.2.7 Arylite

+44 20 8123 2220
info@marketpublishers.com

2.1.2.8 PEEK (Polyether ether keton)
2.1.3. Characteristics by metal-foil substrate types
2.1.3.1. Stainless steel
2.1.3.2. Titanium steel
2.1.3.3. Molybdenum steel
2.1.3.4. Low Carbon steel
2.1.3.5. Ferrite steel
2.1.3.6. Al
2.1.4. Characteristics of Carbonate Substrate (Graphene, CNT)
2.1.4.1. Graphene
2.1.4.2. CNT(Carbon Nano Tube) Substrate
2.1.5. The Characteristics of Ceramic Substrate
2.1.5.1. Aluminum nitride (AlN)
2.1.5.2. Silicon nitride (Si3N4)
2.1.5.3. Alumina (Al2O3)
2.1.6. Transparent Electrode Materials for Flexible Substrate
2.1.7. The current state of Flexible Transparent Electrode Substrate and barrier film development
2.1.7.1. Korea Technology Trends
2.1.7.2. Foreign Technology Trends
2.2. Machine Technology for Flexible Solar cell
2.2.1. Vacuum Metalizing Technology
2.2.1.1. Chemical Vapor Deposition: CVD
2.2.1.2. Co-evaporation
2.2.1.3. Sputtering
2.2.2. Coating
2.2.2.1. Spin coating
2.2.2.2. Doctor-blade
2.2.2.3. Knife-over-edge Coating and Meniscus Coating
2.2.2.4. Slot-die coating
2.2.2.5. Spraying coating
2.2.3. Printing
2.2.3.1. Screen printing
2.2.3.2. Ink-jet printing
2.2.3.3. Pad printing
2.2.3.4. Gravure printing
2.2.3.5. Flexography printing
2.2.3.6. Offset Lithography Printing
2.2.4. Other technologies

+44 20 8123 2220
info@marketpublishers.com

2.2.4.1. Curtain, Multi-Slot, Sliding Coating
2.2.4.2. Electrophotographic Photosensitive, Electron Sensitivity, Magnetic Sensitivity
2.2.5. Roll-to-Roll (R2R) Technology
2.2.5.1. Korea R2R Machine Technology Trend
2.2.5.2. Foreign R2R Machine Technology Trend

3. FLEXIBLE SOLAR CELL

3.1. Thin-film Si Flexible Solar cell
3.2. CIGS Flexible Solar cell
3.3. CdTe Flexible Solar cell
3.4. DSSC Flexible Solar cell
3.5. Organic Flexible Solar cell
3.6. Manufacturing technology by Flexible Solar cells
3.7. Flexible Solar cell Technology Issues and Technology for High Efficiency
3.8. Applications of Flexible Solar cell
3.8.1. Integrated Photovoltaic (IPV)
3.8.1.1. Building Integrated Photovoltaic (BIPV)
3.8.1.2. Clothing-Integrated Photovoltaic (CIPV)
3.8.2. Portable Electronics Charger
3.8.3. Space Solar Power
3.8.4. Military Solar Power
3.8.5. Solar Aircraft

4. TRENDS OF FOREIGN FLEXIBLE SOLAR CELL TECHNOLOGY

4.1. Flexible Thin-film Si Solar cell
4.1.1. Uni-Solar
4.1.2. Fuji Electric Systems
4.1.3. Flexcell
4.1.4. Tianjin Jinneng Solar (JNSOLAR)
4.1.5. PowerFilm Solar
4.1.6. Xunlight
4.2. Flexible CIGS Solar cell
4.2.1. Hahn-Meitner-Institute (HMI) GmbH
4.2.2. ZSW (Zentrum fÃ¼r Sonnenenergie- und Wasserstoff-Forschung)+univ.Stuttgart
4.2.3. CIS Solartechnik GmbH & Co. KG
4.2.4. FLISOM

+44 20 8123 2220
info@marketpublishers.com

4.2.5. ISET(International Solar Electric Technology, Inc.)
4.2.6. Solopower
4.2.7. Global Solar Energy, Inc
4.2.8. AIST(National Institute of Advanced Industrial Science and Technology)
4.2.9. Ascent Solar
4.2.10. Miasole
4.2.11. IBM
4.2.12. Nanosolar (U.S.A)
4.2.13. Ordersun
4.2.14. Solarion
4.3. Flexible CdTe Solar cell
4.3.1. First Solar
4.3.2. ROTH & RAU
4.3.3. EMPA
4.3.4. National Technical Univ. (Ukraine)
4.4. Flexible Dye-sensitized Solar cell
4.4.1. G24i
4.4.2. Corus
4.4.3. SOLARPRINT
4.4.4. Sharp
4.4.5. Peccell Technologies Inc
4.4.6. Aisin Seiki & Toyota Central R&D Lab
4.4.7. DNP (Dai Nippon Printing)
4.4.8. Fujikura
4.4.9. Sony
4.4.10. TDK
4.4.11. AIST
4.4.12. 3GSolar
4.4.13. ITRI
4.4.14. Others
4.5. Flexible Organic Solar cell
4.5.1. Konarka
4.5.2. Plextronics
4.5.3. Solarmer Energy
4.5.4. Heliatek
4.5.5. Mitsubishi Chemicals
4.5.6. Teijin DuPont Films
4.5.7. Toray
4.5.8. Sumitomo Chemicals

+44 20 8123 2220
info@marketpublishers.com

4.5.9. RISÃ˜
4.5.10. Fraunhofer ISE
4.5.11. VTT

5. TREND OF KOREA FLEXIBLE SOLAR CELL TECHNOLOGY

5.1. Flexible Thin-film Si Solar cell
5.2. Flexible CIGS Solar cell
5.2.1. DY Metal
5.2.2. KAIST
5.2.3. Korea Institute of Energy Research
5.3. Flexible CdTe Solar cell
5.4. Flexible Dye-Sensitized Solar cell
5.4.1. ETRI (Electronics and Telecommunications Research Institute)
5.4.2. KERI (Korea Electrotechnology Research Institute)
5.4.3. Samsung SDI
5.4.4. Timo Technology Co., Ltd. & Dyesol-Timo
5.4.5. TG Energy Co., Ltd
5.4.6. Sangbo Co., Ltd
5.4.7. Konkuk University
5.4.8. Others
5.5. Organic Flexible Solar cell
5.5.1. Kolon
5.5.2. KNP Energy
5.5.3. GIST
5.5.4. Korea Research Institute of Chemical Technology
5.5.5. Korea Institute of Machine & Materials
5.5.6. Korea Institute of Science and Technology
5.5.7. Others

6. FLEXIBLE SOLAR CELL MARKET FORECAST(2006~2015)

6.1. The Current State of Flexible Solar Cell Market (2006~2010)
6.1.1. The Current State of Worldwide PV Market(2006~2010)
6.1.2. The Current State of Worldwide Flexible Solar Cell Market(2006~2010)
6.1.3. The Current State of Flexible Solar Cell Market (2006~2010)
6.2. Forecast of Flexible Solar Cell Market (2006~2015)
6.2.1. Worldwide PV Market Forecast (2006~2015)
6.2.2. Worldwide Solar Cell Market Forecast (2006~2015)

+44 20 8123 2220
info@marketpublishers.com

6.2.3. Flexible Solar Cell Market Forecast (2006~2015)
6.2.4. Flexible Solar Cell Market Forecast by Applications (2006~2015)
6.2.5. Flexible Solar Cell Market Forecast by Technology & Substrates (2006~2015)
6.2.5. Flexible Solar Cell Sales Scale Forecast (2006~2015)

7. INDEX

7.1. Figure
7.2. Table

+44 20 8123 2220
info@marketpublishers.com

I would like to order

Product name: Flexible Thin-Film Solar Cell Technology and Market Forecast (2006~2015)
Product link: https://marketpublishers.com/r/F612065D2E6EN.html
Price: US$ 3,990.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/F612065D2E6EN.html

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

**All fields are required

Custumer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at https://marketpublishers.com/docs/terms.html

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970