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Quantum Dot and Quantum Dot Display (QLED): Market Shares, Strategies, and Forecasts, Worldwide, Nanotechnology, 2013 to 2019

https://marketpublishers.com/r/Q79F3223123EN.html
Date: March 2013
Pages: 221
Price: US$ 3,800.00 (Single User License)
ID: Q79F3223123EN

Abstracts

WinterGreen Research announces that it has published a new study Quantum Dot and Quantum Dot Display (QLED) Market Shares, Strategy, and Forecasts, Worldwide, 2013 to 2019. The 2013 study has 221 pages, 80 tables and figures. Quantum dots will cascade into the marketplace. They offer lower cost, longer life, and brighter lighting.

According to Susan Eustis, "The commercialization of quantum dots using kilogram quantity mass production is a game-changer. High quality, high quantity and lowest price quantum dots increase product quality in every industry. The rate of change means speeded products cycles are evolving."

Once manufacturers learn to integrate higher efficiency luminescent quantum dots into their products, each vendor will need to follow or dramatically lose market share. This level of change brought by quantum dot and quantum dot displays (QLED) represents a new paradigm that will create new industries, products and jobs in science and industry. The list of possible quantum dot applications is ever expanding. New applications are waiting for the availability of more evolved quantum dots.

Quantum Dot LED (QLED) commercial focus has remained on key optical applications: Optical component lasers are emerging as a significant market. LED backlighting for LCD displays, LED general lighting, and solar power quantum dots are beginning to reach the market. Vendors continue to evaluate other applications.

Quantum dots QDs are minute particles or nano-particles in the range of 2 nm to 10 nm diameter. Quantum dots are tiny bits of semiconductor crystals with optical properties that are determined by their material composition. Their size is small to the nanoparticle

level. They are made through a synthesis process. QD Vision synthesizes these materials in solution, and formulates them into inks and films. Quantum Dot LEDs (QLED) enable performance and cost benefits.

The quantum dot cannot be seen with the naked eye, because it is an extremely tiny semiconductor nanocrystal. The nanocrystal is a particle having a particle size of less than 10 nanometers. QDs have great potential as light-emitting materials for next-generation displays with highly saturated colors because of high quantum efficiency, sharp spectral resolution, and easy wavelength tenability. Because QDs convert light to current, QDs have uses in other applications, including solar cells, photo detectors, and image sensors.

QLED displays are anticipated to be more efficient than LCDs and OLEDs. They are cheaper to make. Samsung estimates that they cost less than half of what it costs to make LCDs or OLED panels. QLED quantum dot display is better than OLED. It is brighter, cheaper, and saves more energy. Energy-savings is a strong feature. Its power consumption is 1/5 to 1/10 of the LCD's Samsung offers now. Manufacturing costs of a display are less than half of OLED or LCD. It has a significantly longer life than the OLED.

QLED quantum dot display uses active matrix to control the opening and closing of the pixels of each color. Quantum dots have to use a thin film transistor. Emission from quantum dots is due to light or electrical stimulation. The quantum dots are able to produce different colors depending on the quantum shape and size used in the production of materials.

Dow Electronic Materials, a business unit of The Dow Chemical Company (NYSE: DOW) and Nanoco Group plc (AIM: NANO) have a global licensing agreement for Nanoco's cadmium-free quantum dot technology. Under the terms of the agreement, Dow Electronic Materials will have exclusive worldwide rights for the sale, marketing and manufacture of Nanoco's cadmium-free quantum dots for use in electronic displays.

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Contents

QUANTUM DOT AND QUANTUM DOT LED (QLED) EXECUTIVE SUMMARY

QUANTUM DOT AND QUANTUM DOT LED (QLED) MARKET

QUANTUM DOT MARKET DRIVING FORCES

Cadmium-Free Quantum Dots

QUANTUM DOT LED (QLED) MARKET SHARES

QUANTUM DOT AND QUANTUM DOT LED (QLED) MARKET FORECASTS

Quantum Dot LED (QLED) Application Forecasts

1. QUANTUM DOT AND QLED MARKET DESCRIPTION AND MARKET DYNAMICS

1.1 Display Technology
1.2 Quantum Dot Light Emitting Diodes (QLEDs)
  1.2.1 QLED Quantum Dot Display Is Better Than OLED
  1.2.2 Quantum Dots Semiconductor Nanocrystals
  1.2.3 Quantum Dot Changes In Energy Band Gaps
1.3 Quantum Dot LED (QLED) Commercial Focus
  1.3.1 Life Sciences
  1.3.2 Applied Sciences
  1.3.3 Medical Sciences

2. QUANTUM DOT AND QUANTUM DOT LED (QLED) MARKET SHARES AND FORECASTS

2.1 Quantum Dot and Quantum Dot LED (QLED) Market
2.2 Quantum Dot Market Driving Forces
  2.2.1 Cadmium-Free Quantum Dots
2.3 Quantum Dot LED (QLED) Market Shares
  2.3.1 QD Laser
  2.3.2 Nanoco Technologies
  2.3.3 Nanoco Cadmium-Free Quantum Dots (CFQD™)
  2.3.4 Nanoco Group / Dow Chemical Company (NYSE: DOW)

2.3.5 Nanoco Joint Development Agreement With Large Lighting Company
2.3.6 NanoSys Inc.
2.3.7 Nanosys Product Oriented Collaborations
2.3.8 NanoAxis Nanomedicine Applications
2.3.9 NN-Labs
2.3.10 Nexxus LightingPartnership with QD Vision Sets Industry Standard
2.3.11 QD Vision
2.3.12 QD Vision and Cadmium
2.3.13 Quantum Materials Corporation (QMC)
2.3.14 NanoPhotonica
2.3.15 Ocean NanoTech Organic Soluble Iron Oxide Nanoparticles
2.3.16 Ocean NanoTech Water Soluble Quantum Dots
2.3.17 Life Technologies Qdot Nanocrystal Applications
2.4 Quantum Dot and Quantum Dot LED (QLED) Market Forecasts
2.4.1 Quantum Dot LED (QLED) Application Forecasts
2.4.2 Benefits of QLEDs
2.4.3 Quantum Dot Commercial Applications – General Lighting
2.4.4 Quantum Dot and Quantum Dot LED (QLED) Display Market
2.4.5 Nanoco / Dow To Sell, Market And Manufacture Cadmium-Free Quantum Dots For LCD displays
2.4.6 Quantum Dot and Quantum Dot LED (QLED) Medical Imaging Dollars
2.4.7 Quantum Dot Telco Laser Dollars, Worldwide, 2013-2019
2.4.8 Quantum Dot and Quantum Dot LED (QLED) Solar Market
2.4.9 Nanoco Cadmium free Nanomaterials Used As Solar Ink
2.4.10 Quantum Cascade Lasers (QCLs)
2.5 Quantum Dot LED (QLED) Regional Market Analysis

3. QUANTUM DOT DISPLAY PRODUCT DESCRIPTION

3.1 Samsung
3.1.1 Samsung Developed The World's First Full-Color Quantum Dot Display QLED
3.1.2 Samsung Assessment of QLED
3.1.3 Samsung Quantum Dots
3.1.4 Samsung Advanced Institute of Technology Nanotechnology Research
3.2 LG
3.2.1 LG Display / QD Vision
3.2.2 LG Display Joint Development Agreement With QD Vision
3.2.3 QD Vision and Cadmium
3.3 QD Vision

3.3.1 QLEDs -- The Future
3.3.2 QD Vision QLED Technology
3.4 3M
3.5 Evident Technologies
3.5.1 Evident Product Designed To Generate Electricity
3.5.2 Evident Technologies Thermoelectrics (TE)
3.6 InVisage
3.7 Nanosys QDEF
3.7.1 Nanosys Product Oriented Collaborations
3.7.2 NanoSys Inc.
3.7.3 NanySys QDEF
3.8 NanoPhotonica
3.9 Nanoco Technologies
3.9.1 Nanoco Quantum Dots
3.9.2 Nanoco Quantum Dot Beads
3.9.3 Nanoco Cadmium-Based Quantum Dots (NanoDots™)
3.9.4 Nanoco Cadmium-Free Quantum Dots (CFQD™)
3.10 Life Technologies Corp
3.10.1 Qdot Probes
3.10.2 Life Technologies Corp Invitrogen
3.10.3 Life Technologies Qdot Nanocrystals
3.11 NanoAxis
3.11.1 NanoAxis Quantum Dots (QDs)
3.11.2 NanoAxis AxiCad™ Quantum Dots
3.12 N-N Labs
3.12.1 N-N Labs CuInS/ZnS (CIS, Cadmium Free Core-Shell Quantum Dots)
3.12.2 N-N Labs Mn:ZnSe (D-dots, Cadmium Free Doped Quantum Dots)
3.13 Nexxus Lighting
3.14 Ocean Nanotech
3.14.1 Ocean NanoTech Organic Soluble Iron Oxide Nanoparticles
3.14.2 Ocean NanoTech Water Soluble Quantum Dots
3.14.3 Ocean Nanotech Technology
3.14.4 Ocean Nanotech Water Soluble Quantum Dots - QSH
3.14.5 Ocean Nanotech Water Soluble Quantum Dots - QXH
3.14.6 Ocean Nanotech Organic Soluble Quantum Dots - QSP
3.14.7 Ocean Nanotech Organic Soluble Quantum Dots - QPP
3.14.8 Ocean Nanotech Water Soluble Heavy Metal Free Quantum Dots - CSH
3.14.9 Ocean Nanotech Water Soluble Quantum Dot Beads >> QBA
3.14.10 Ocean Nanotech Water Soluble Quantum Dot Beads >> QBH

3.15 QD Laser
3.15.1 QD Laser 1270-1310nm Quantum Dot Lasers
3.15.2 QD Laser 1300nm High Temperature Quantum Dot Lasers
3.15.3 QD Laser 1000-1180nm DFB Lasers For Material Processing And Sensing
3.16 Quantum Material Corp
3.16.1 Quantum Material Quantum Dots: Man-Made Molecule
3.16.2 Rice University Quantum Dot Synthesis
3.16.3 Access2Flow QD Mass-Production
3.17 Sigma-Aldrich

4. QUANTUM DOT AND QUANTUM DOT LED (QLED) TECHNOLOGY

4.1 Nanoco Technologies Integrating Red And Green Quantum Dots With Blue LEDs
4.2 Graphene
4.3 Fluorescence
4.4 Life Technologies Qdot Nanocrystal Structure
4.5 Qdot Bioconjugates
4.6 Applications for Qdot Nanocrystals
4.6.1 Life Technologies Qdot Nanocrystal Structure
4.6.2 Tuneability of Life Technologies Qdot Nanocrystals
4.6.3 Qdot Bioconjugates
4.6.4 Applications for Life Technologies Qdot Nanocrystals
4.7 QDVision LED Light
4.7.1 LED backlights
4.7.2 Nanosys QDEF Technology Optical Film Component for LED LCD Backlight
4.8 Fujitsu Laboratories Ltd. QD Laser

5. QUANTUM DOT DISPLAY COMPANY DESCRIPTION

5.1 Evident Technologies
5.1.1 Evident Technologies Reorganization under Chapter
5.1.2 Evident Technologies Quantum dots Revolutionizing Material
5.1.3 Samsung and Evident Technologies Enter Into LED Patent Agreement
5.2 InVisage
5.2.1 InVisage Named as Hot Startup to Watch by EE Times
5.3 LG Display
5.3.1 QD Vision and LG Display Next Generation Active Matrix Displays Based on Quantum Dot LEDs (QLEDS)
5.4 Life Technologies Corp

5.5 Nanoco Technologies
5.5.1 Nanoco Transition From Research-Based Company To High-Tech Manufacturing Business
5.5.2 Nanoco Technical Approach To Integrating Red And Green Quantum Dots With Blue LED
5.5.3 Nanoco Team
5.5.4 Nanoco Technologies Revenue
5.5.5 Nanoco's Mission
5.5.6 Nanoco Group / Dow Chemical Company (NYSE: DOW)
5.5.7 Nanoco / Dow To Sell, Market And Manufacture Cadmium-Free Quantum Dots For LCD displays
5.5.8 Nanoco Agreement with Tokyo Electron
5.5.9 Nanoco Joint Development Agreement With Large Lighting Company
5.5.10 Nanoco Green Quantum Dots For A Major Japanese Corporation and Other Agreements
5.6 NanoAxis
5.6.1 NanoAxis Mission Statement
5.6.2 Nano Axis Industries
5.6.3 NanoAxis QD Applications
5.7 Nanosys Sixth Funding Round: $15M to Expand Quantum Dot Manufacturing
5.7.1 NanoSys Inc.
5.8 N-N Labs
5.8.1 N-N Labs Technology
5.9 Nexxus Lighting
5.9.1 Nexxus LightingPartnership with QD Vision Sets Industry Standard
5.10 Ocean Nanotech
5.10.1 Ocean Nanotech Technology
5.11 QD Vision
5.11.1 QD Vision Quantum Dots
5.11.2 QD Vision Partners for OLED Panels
5.12 QD Laser
5.13 Quantum Materials Corp
5.13.1 QMC Mass-Production of Thin-Film PV Quantum Dot Solar Cells
5.13.2 QMC Mass-Production of Printed Electronics
5.13.3 QMC QD Nanotech Applications
5.13.4 QMC QD Printing Applications
5.13.5 Quantum Materials Corporation Displays:
5.13.6 Quantum Materials Corporation Lighting:
5.13.7 Quantum Materials Corporation Thermoelectrics:

5.13.8 Quantum Materials Corporation Photonics & Telecommunications
5.13.9 Quantum Materials Corporation Security Links:
5.14 Samsung
5.14.1 Samsung Electronics Revenue for Fourth Quarter 2012
5.14.2 Samsung Capital Expenditure
5.14.3 Samsung Differentiated Product Mix to Alleviate Chip Supply Squeeze
5.14.4 Samsung Emerging Markets
5.14.5 Samsung LED TVs Drive Growth
5.14.6 Samsung Electronics Co., Ltd.
5.14.7 Samsung Revenue
5.14.8 The Samsung Philosophy
5.14.9 Samsung Values
5.14.10 SamsungVision 2020
5.14.11 Samsung Nanotechnology
5.15 Sigma-Aldrich

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List Of Tables

LIST OF TABLES AND FIGURES

Table ES-1 Quantum Dot Market Driving Forces
Table ES-2 Quantum Dot QLED Features
Table ES-3 Quantum Dot Market Factors
Table ES-4 Quantum Dot Display Characteristics
Figure ES-5 Quantum Dot (QLED) Market Shares, Dollars, Worldwide, 2012
Figure ES-6 Quantum Dot and Quantum Dot LED (QLED) Market Forecasts, Dollars, Worldwide, 2013-2019
Table 1-1 Advanced Display Technology Features
Table 2-1 Quantum Dot Market Driving Forces
Table 2-2 Quantum Dot QLED Features
Table 2-3 Quantum Dot Market Factors
Table 2-4 Quantum Dot Display Characteristics
Figure 2-5 Quantum Dot (QLED) Market Shares, Dollars, Worldwide, 2012
Table 2-6 Quantum Dot (QLED) Market Shares, Dollars, Worldwide, 2012
Table 2-7 Life Technologies Qdot Nanocrystal Applications
Figure 2-8 Quantum Dot and Quantum Dot LED (QLED) Market Forecasts, Dollars, Worldwide, 2013-2019
Figure 2-9 Quantum Dot and Quantum Dot LED (QLED) Market Forecasts, Units, Worldwide, 2013-2019
Table 2-10 Quantum Dot and Quantum Dot LED (QLED) Market Industry Segments, Dollars, Worldwide, 2012-2019
Table 2-11 Quantum Dot and Quantum Dot LED (QLED) Units and Dollars, Worldwide, 2013-2019
Table 2-12 Benefits of QLEDs
Table 2-13 Quantum Dot Areas
Table 2-14 Quantum Dot Semiconductor Areas
Table 2-15 Quantum Dot Optoelectronics Areas
Figure 2-16 Quantum Dot and Quantum Dot LED (QLED) Lighting Market, Dollars, Worldwide, 2013-2019
Table 2-17 Optoelectronics Solid State Lighting Quantum Dot Product Advantages
Figure 2-18 Quantum Dot and Quantum Dot LED (QLED) Display Market Forecasts, Dollars, Worldwide, 2013-2019
Figure 2-19 Quantum Dot and Quantum Dot LED (QLED) Medical Imaging Dollars, Worldwide, 2013-2019
Figure 2-20 Quantum Dot Telco Laser Dollars, Worldwide, 2013-2019

Figure 2-21 Quantum Dot and Quantum Dot LED (QLED) Solar Market Forecasts, Dollars, Worldwide, 2013-2019
Table 2-22 Quantum Dot and Quantum Dot LED (QLED) Regional Market Segments, Dollars, 2012
Table 2-23 Quantum Dot and Quantum Dot LED (QLED) Regional Market Segments, 2012
Figure 2-24 Nanoco Technologies Global Presence
Figure 3-1 Samsung 4" AM-QLED Prototype Photo
Figure 3-2 Samsung Full-Color Quantum Dot Display QLED
Figure 3-3 QD Vision Different Colors Quantum Dot
Figure 3-4 QD Vision QLEDS
Table 3-5 QLED Features
Figure 3-6 QD Vision QLED
Figure 3-7 Evident Technologies Nano-Sized Semiconductors
Figure 3-8 Evident Technologies Quantum Dot Semiconductor Nanomaterials
Figure 3-9 Evident Technologies Next Generation Materials Systems
Table 3-10 Evident Technologies Thermoelectric Devices Benefits
Figure 3-11 InVisage QuantumFilm
Figure 3-12 InVisage Dynamic Zoom
Figure 3-13 Nanosys Quantum Dots
Figure 3-14 NanoSys Quantum Dots Edgelit Blu Stack Integration System
Figure 3-15 NanoSys QDEF
Figure 3-16 Nanoco Technologies Quantum Dots
Figure 3-17 Nanoco Quantum Dot Beads
Table 3-18 Nanoco Quantum Dot Beads Features
Figure 3-19 Nanoco Technologies is supplying CFQD Cadmium-Free Quantum Dots
Figure 3-20 Life Tech Qdot Probes
Table 3-21 Life Tech Qdot Probes Features
Table 3-22 Life Technologies Qdot nanocrystal Conjugates Life Science Products And Applications
Figure 3-23 Life Technologies Corp Invitrogen
Figure 3-24 NanoAxis Quantum Dot Size Comparison
Figure 3-25 NanoAxis AxiCad™ Quantum Dots
Table 3-26 NanoAxis AxiCad Quantum Dot Forms
Figure 3-27 Nexxus Lighting QD Bulb
Figure 3-28 Ocean NanoTech Soluble Quantum Dots Type
Figure 3-29 Ocean NanoTech Soluble Quantum Dots Accesories and Tools
Table 3-30 Ocean NanoTech Core Competences
Table 3-31 QD Laser Semiconductor Laser Solutions

Figure 3-32 QD Laser 1270-1310nm quantum dot lasers
Figure 3-33 QD Laser 1300nm High Temperature Quantum Dot Lasers
Figure 3-34 QD Laser 1000-1180nm DFB Lasers For Material Processing And Sensing
Figure 4-1 Schematic of the Overall Structure of a Life Technologies Qdot Nanocrystal Conjugate
Figure 4-2 Relative Size of a Life Technologies Qdot Nanocrystal and ther Small Atomic Structures
Figure 4-3 Tuneability of Qdot Nanocrystals
Figure 4-4 Bioconjugate Color Based On Same Underlying Material (Differ Only In Size)
Table 4-5 Life Technologies Qdot Nanocrystal Applications
Figure 4-6 QDVision LED Light
Figure 4-7 Technological Advances That Have Enabled Laser Operation At High Temperatures
Figure 5-1 LG Display Vision
Figure 5-2 Nanoco Technologies Cadimum Free Quantum Dots
Figure 5-3 Nanoco Technologies Global Presence
Table 5-4 Nanoco Industry Positioning Of Semiconductor Nanoparticles
Figure 5-5 Segment Sales and Operating Profit
Figure 5-6 Samsung Values
Figure 5-8 Samsung Vision

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