

The Global Market for Quantum Dots 2024-2034

<https://marketpublishers.com/r/GF481CE67457EN.html>

Date: September 2023

Pages: 300

Price: US\$ 1,250.00 (Single User License)

ID: GF481CE67457EN

Abstracts

The multi-billion dollar quantum dot-enabled TV market will experience further growth this year, with market innovations leading to enhanced products utilizing new configurations in displays, Micro-LEDs, security tagging, medical diagnostics, quantum computing and Agtech. QDs are a proven and scaled technology and relatively low cost for the high-end applications they add value to. Quantum dots improve displays products such as TVs and monitors through benefits including wider color gamut, better brightness, and efficiency. Major TV manufacturers like Samsung, Sony and LG utilize QD films in their products. The report profiles quantum dot suppliers making this possible.

Quantum Dots (QDs) are increasingly used in light-emitting devices (LEDs), solar cells, photodiodes, thermoelectrics, photoconductors and field-effect transistors, while QD solutions have been used in a number of in vivo and in vitro imaging, sensing and labelling techniques.

Emerging applications like quantum dot MicroLED displays, quantum dot lasers, QD-enhanced Li-ion batteries, and QD transistors represent new revenue opportunities as the technology advances. Perovskite QDs are also highlighted as a next-gen material.

Report contents include:

Quantum dot (QD) types, properties and production methods.

Global revenues for quantum dots, historical and market forecast to 2034, by region and end use markets.

Supply chain analysis for quantum dots and narrow band phosphors.

Market drivers and trends.

Challenges, by market.

Analysis of QD market segments and the main players in each segment.

Assessment of quantum dots on glass, quantum dot colour filters (QDCF) for microLEDs and displays, hybrid QD-NBP displays, hybrid QD-OLED displays, perovskite QDs and inkjet printed QDs.

Assessment of graphene quantum dots and perovskite quantum dots market.

Market assessment of quantum dots in TV displays and smartphone displays, VR headsets, solar cells, security tags, security inks, sensors, photodetectors, quantum dot lasers, quantum dot transistors, photonic crystals, bio-imaging, quantum dot solar windows, biomarkers, solid-material-based memory, thermoelectric materials, quantum dot computers, Agtech, artificial photosynthesis and light emitting diodes (LEDs).

119 company profiles of quantum dot producers and product developers. Companies profiled include Applied Quantum Materials Inc., BrightComSol GmbH, Canon, Inc., Diraq, Dotz Nano, Helio Display Materials, Nanoco Technologies, Nanosys, QDI Systems, Raysolve Ltd., Samsung, and Ubiquitous Quantum Dots.

List of Quantum Dot companies no longer trading.

Contents

1 EXECUTIVE SUMMARY

- 1.1 Growth in high definition TV demand
- 1.2 Consumer display trends
- 1.3 Quantum dot display (QD-OLED and QD-LCD) products
- 1.4 QD advantages
- 1.5 Recent market growth
- 1.6 QD-TV market
 - 1.6.1 The Quantum Dot TV market in 2022
 - 1.6.2 The Quantum Dot TV market in 2023
- 1.7 Cadmium vs. cadmium free
 - 1.7.1 Cadmium QDs
 - 1.7.2 Cadmium-free QDs
 - 1.7.3 Perovskite quantum dots
 - 1.7.4 Graphene quantum dots
- 1.8 Market drivers and trends for quantum dots
- 1.9 Market outlook for quantum dots (5-10 years)
- 1.10 Market challenges for quantum dots

2 RESEARCH SCOPE AND METHODOLOGY

- 2.1 Report scope
- 2.2 Market definition
- 2.3 Research methodology
 - 2.3.1 Primary research
 - 2.3.2 Secondary research

3 INTRODUCTION

- 3.1 Properties
 - 3.1.1 Mode of operation
- 3.2 Synthesis
- 3.3 Types of quantum dots
 - 3.3.1 Cadmium Selenide, Cadmium Sulfide and other materials
 - 3.3.2 Cadmium free quantum dots
- 3.4 Two-dimensional quantum dots
- 3.5 Carbon quantum dots (CDs)

- 3.5.1 Properties
- 3.5.2 Applications
- 3.6 Graphene quantum dots (GQDs)
 - 3.6.1 Properties
 - 3.6.2 Synthesis
 - 3.6.3 Applications
 - 3.6.3.1 Pricing
 - 3.6.4 Producers
- 3.7 Perovskite quantum dots (PQDs)
 - 3.7.1 Properties
 - 3.7.2 Comparison to conventional quantum dots
 - 3.7.3 Synthesis methods
 - 3.7.4 Applications
 - 3.7.4.1 Displays
 - 3.7.5 Producers
- 3.8 Quantum rods
 - 3.8.1 Properties
 - 3.8.2 Applications
- 3.9 Narrow band gap phosphors

4 QUANTUM DOTS TECHNOLOGY READINESS (TRL)

5 QUANTUM DOTS REGULATIONS

6 THE GLOBAL MARKET FOR QUANTUM DOTS

- 6.1 Markets and applications
- 6.2 Licensing, collaborations and partnerships
- 6.3 Supply chain
- 6.4 Production capacities
- 6.5 Global revenues 2018-2034
 - 6.5.1 By end use market
 - 6.5.2 By region
- 6.6 DISPLAYS
 - 6.6.1 Market drivers and trends
 - 6.6.2 Market supply chain
 - 6.6.3 LCDS vs. OLEDs vs. QD-LCDs/QLEDs
 - 6.6.3.1 Liquid Crystal Displays (LCD)
 - 6.6.4 QD-LCD TVs/QLEDs

- 6.6.5 Quantum dot enhancement film (QDEF) for current QLEDs
- 6.6.6 Quantum Dot on Glass (QDOG)
- 6.6.7 Quantum dot colour filters (QDCC)
- 6.6.8 XQDEF
- 6.6.9 Quantum dots on-chip
- 6.6.10 Electroluminescent quantum dots
- 6.6.11 MiniLED displays
 - 6.6.11.1 Comparison to LCD and OLED
 - 6.6.11.2 Advantages and disadvantages
 - 6.6.11.3 Backplane types
 - 6.6.11.3.1 Passive matrix driving miniLED
 - 6.6.11.4 Costs
 - 6.6.11.5 High dynamic range miniLED displays
 - 6.6.11.6 Trends in MiniLED displays
 - 6.6.11.7 Quantum dot films for miniLED displays
- 6.6.12 Perovskite colour enhancement film in Mini-LEDs
 - 6.6.12.1 Eyesafe QD
 - 6.6.12.2 QD-Mini-LED-BLU
 - 6.6.12.3 Perovskite colour enhancement film in MiniLEDs
- 6.6.13 MicroLEDs
 - 6.6.13.1 Development
 - 6.6.13.2 Types
 - 6.6.13.3 Comparison to LCD and OLED
 - 6.6.13.4 MicroLED displays
 - 6.6.13.4.1 Advantages
 - 6.6.13.4.2 Transparency
 - 6.6.13.4.3 Borderless
 - 6.6.13.4.4 Flexibility
 - 6.6.13.5 Costs
 - 6.6.13.6 Manufacturing
 - 6.6.13.6.1 Epitaxy and Chip Processing
 - 6.6.13.6.1.1 Uniformity
 - 6.6.13.6.2 Assembly Technologies
 - 6.6.13.6.2.1 Monolithic fabrication of microdisplays
 - 6.6.13.6.2.2 Mass transfer
 - 6.6.13.6.2.3 Mass Transfer Processes
 - 6.6.13.6.3 Full colour conversion
 - 6.6.13.6.3.1 Phosphor Colour Conversion LEDs
 - 6.6.13.6.3.2 Quantum dots colour conversion

- 6.6.14 QDCC for micro-LED displays
- 6.6.15 Flexible QD displays
 - 6.6.15.1 Flexible QLEDs
 - 6.6.15.2 Foldable QLED
- 6.6.16 Samsung QD-OLEDs
- 6.6.17 LG's QNED" LCD TVs
- 6.6.18 Quantum dot LCD-based VR headsets
- 6.6.19 Narrow band phosphor LCDs
- 6.6.20 Hybrid QD-NBP
- 6.6.21 New display products in 2023
- 6.6.22 Global market revenues
 - 6.6.22.1 QD-TV unit sales 2016-2034
 - 6.6.22.2 QD-TV revenues 2016-2034
 - 6.6.22.3 QD monitor unit sales 2016-2034
 - 6.6.22.4 QD monitor revenues 2016-2034
- 6.7 PHOTOVOLTAICS
 - 6.7.1 Market drivers and trends
 - 6.7.2 Applications
 - 6.7.2.1 Advantages of quantum dots in photovoltaics
 - 6.7.3 Types of quantum dot solar cells
 - 6.7.3.1 Tandem Solar Cells
 - 6.7.3.2 Metal—semiconductor/ Schottky QD junction solar cell
 - 6.7.3.3 Silicon/QD Film Hybrid Solar Cells
 - 6.7.3.4 Silicon/Graphene QD Film Hybrid Solar Cells
 - 6.7.3.5 Depleted-heterojunction QD solar cell
 - 6.7.3.6 QD-sensitized solar cells (QDSSC)
 - 6.7.3.7 Quantum dot solar windows
 - 6.7.4 Market challenges
 - 6.7.5 Companies
 - 6.7.6 Global market revenues
- 6.8 LED LIGHTING
 - 6.8.1 Market drivers and trends
 - 6.8.2 Applications
 - 6.8.2.1 LED lighting
 - 6.8.2.2 Horticultural lighting
 - 6.8.3 Market challenges
 - 6.8.4 Global market revenues
 - 6.8.5 Companies
- 6.9 BIOTECH AND MEDICINE
 - 6.9.1 Market drivers and trends

- 6.9.2 Applications
 - 6.9.2.1 Fluorescent labelling
 - 6.9.2.2 Drug delivery
 - 6.9.2.3 Biosensing
 - 6.9.2.4 Photodynamic therapy
 - 6.9.2.5 DNA analysis
 - 6.9.2.6 Immunoassays
- 6.9.3 Market challenges
- 6.9.4 Companies
- 6.9.5 Global market revenues
- 6.10 PHOTODETECTORS
 - 6.10.1 Market drivers and trends
 - 6.10.2 Applications
 - 6.10.2.1 SWIR Sensing
 - 6.10.2.2 QD CMOS Image Sensors
 - 6.10.2.2.1 Main types of commercial quantum dot sensor arrays
 - 6.10.2.3 QD-on-Si SWIR Detection
 - 6.10.2.4 QD-Si hybrid image sensors
 - 6.10.2.5 UV Imaging
 - 6.10.2.5.1 Perovskite QDs
 - 6.10.2.5.2 QD-on-CMOS
 - 6.10.3 Companies
 - 6.10.4 Global market revenues
- 6.11 SECURITY AND ANTI-COUNTERFEITING
 - 6.11.1 Market drivers and trends
 - 6.11.2 Applications
 - 6.11.3 Companies
 - 6.11.4 Global market revenues
- 6.12 QUANTUM COMPUTING
 - 6.12.1 Overview
 - 6.12.2 Companies
- 6.13 OTHER MARKETS
 - 6.13.1 AgriTech
 - 6.13.1.1 Applications
 - 6.13.2 Batteries
 - 6.13.2.1 Properties
 - 6.13.2.2 Applications
 - 6.13.2.2.1 Lithium-Ion Batteries (LIBs)
 - 6.13.2.2.2 Solid-state batteries

- 6.13.2.2.3 Supercapacitors
- 6.13.3 Thermoelectrics
 - 6.13.3.1 Properties
 - 6.13.3.2 Applications
- 6.13.4 Lasers
 - 6.13.4.1 Description
 - 6.13.4.2 Applications
- 6.13.5 Photocatalysts
 - 6.13.5.1 Properties
 - 6.13.5.2 Applications
- 6.13.6 Photoelectrochemical sensors
 - 6.13.6.1 Properties
 - 6.13.6.2 Applications
- 6.13.7 Sunscreen
- 6.13.8 Hydrogen production
- 6.13.9 Autonomous vehicle sensors

7 QUANTUM DOT PRODUCER AND PRODUCT DEVELOPER PROFILES 196 (119 COMPANY PROFILES)

8 QUANTUM DOTS COMPANIES NO LONGER TRADING

9 REFERENCES

List Of Tables

LIST OF TABLES

- Table 1. Quantum dot display products.
- Table 2. Quantum dot advantages in displays.
- Table 3. Main markets for QDs in terms of volume.
- Table 4. Market drivers and trends for quantum dots.
- Table 5. Market challenges for quantum dots.
- Table 6. Chemical synthesis of quantum dots.
- Table 7. Comparison of types of quantum dots.
- Table 8. Applications of carbon quantum dots.
- Table 9. Comparison between carbon quantum dots and graphene quantum dots.
- Table 10. Comparison of graphene QDs and semiconductor QDs.
- Table 11. Comparison of quantum dots synthesis methods.
- Table 12. Markets and applications for graphene quantum dots.
- Table 13. Graphene quantum dots producers.
- Table 14. Perovskite quantum dots (PQDs) overview.
- Table 15. Comparative properties of conventional QDs and Perovskite QDs.
- Table 16. Applications of perovskite QDs.
- Table 17. Development roadmap for perovskite QDs.
- Table 18. Properties of perovskite QLEDs comparative to OLED and QLED.
- Table 19. Perovskite-based QD producers.
- Table 20. Overview of quantum rods.
- Table 21. Applications of quantum rods.
- Table 22. Technology Readiness Level (TRL) Examples.
- Table 23. Global quantum dot regulations.

§

I would like to order

Product name: The Global Market for Quantum Dots 2024-2034

Product link: <https://marketpublishers.com/r/GF481CE67457EN.html>

Price: US\$ 1,250.00 (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/GF481CE67457EN.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**

Customer 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