

Optoelectronics Market by Device (LEDs, Sensors), Device Material (Gallium Nitride, Indium Phosphide), Application (Measurement, Communication, Lighting), End User (Consumer Electronics, Healthcare), and Geography - Forecast to 2027

<https://marketpublishers.com/r/O95275538088EN.html>

Date: June 2021

Pages: 308

Price: US\$ 4,175.00 (Single User License)

ID: O95275538088EN

Abstracts

Optoelectronics Market by Device (LEDs, Sensors), Device Material (Gallium Nitride, Indium Phosphide), Application (Measurement, Communication, Lighting), End User (Consumer Electronics, Healthcare), and Geography—Forecast to 2027

The optoelectronics market is expected to record a CAGR of 9.6% from 2020 to 2027 to reach \$ 77.9 billion by 2027.

Succeeding extensive secondary and primary research and in-depth analysis of the market scenario, the report carries out an impact analysis of the key industry drivers, restraints, and opportunities. Factors such as the growing adoption of smart consumer electronics devices, increasing demand for optical solutions in the healthcare and automotive industries, and rising need for durable, low power consuming components are the factors driving the growth of this market. However, high initial costs associated with manufacturing and fabrication are expected to hamper the growth of the market to an extent.

Optoelectronics is a fast-emerging technology dealing with the sourcing, detection, and control of light. The technology has become increasingly important in a wide range of applications across the automotive, telecommunications, and other industry verticals. Optoelectronics is a broad field, and it covers many devices such as LEDs and elements, information displays, optical storages, remote sensing systems, and optical communication systems. Optoelectronics technology offers superior performance with

high beam quality and low energy consumption at minimal costs. Moreover, as sensitive optoelectronic components operate in potentially high-temperature environments, active thermoelectric coolers are used for temperature stabilization to ensure maximum performance and longevity of the components.

The COVID-19 pandemic has drastically hit the manufacturing and processing industries worldwide. Governments worldwide imposed lockdowns to minimize the spread of the virus, resulting in the shutting down of manufacturing facilities and disruptions in supply chains owing to trade restrictions. The market witnessed a dip in 2020 due to the factors above. Moreover, as the market slowly and steadily opened up with relaxations in the lockdown, a demand-supply gap was witnessed due to the shutting down of production facilities and halted manufacturing operations. However, the market is expected to gain traction by 2021, with the manufacturing facilities operating at full capacity to cater to the growing demand.

The optoelectronics market has been segmented based on device, device material, application, end user, and geography.

Based on device, the optoelectronics market has been segmented into LEDs, sensors, infrared components, optocouplers, photovoltaic cells, displays, and others, such as optical fiber, solid-state relays, and laser diodes. The sensors segment is projected to record the highest CAGR during the forecast period. The high growth rate is attributed to the growing adoption of various sensors such as photodiodes, image sensors, and optical sensors across various industry verticals. Moreover, the increasing incorporation of IoT and other connected technologies is further expected to propel the demand for sensors during the forecast period.

Based on device material, the optoelectronics market has been segmented into gallium nitride, gallium arsenide, gallium phosphide, silicon germanium, silicon carbide, and indium phosphide. In 2020, the gallium nitride segment accounted for the largest market share amongst device materials in the optoelectronics market. Gallium nitride (GaN) is a binary III/V direct bandgap semiconductor that is ideal for use in high-power transistors capable of operating at high temperatures. The ability to withstand high temperatures and voltages makes the material ideal for imaging and sensing applications. GaN is used in LEDs, power devices, RF components, lasers, and photonics applications. Thus, the need for enhanced efficiency, minimized power consumption, and lower system costs is expected to contribute to the largest market share of the gallium nitride segment.

Based on application, the optoelectronics market has been segmented into lighting, security & surveillance, communication, measurement, displays, and other applications such as infotainment, spectrometry, and scanning. The measurement segment accounted for the largest share of the optoelectronics market in 2020. The high market share is attributed to the increasing use of optical measurement systems for process monitoring and control across various industries and in machine vision and other applications.

Based on end user, the optoelectronics market has been segmented into automotive, consumer electronics, aerospace & defense, IT & telecommunication, healthcare, food & beverage, energy & utilities, residential, industrial, commercial, and others, such as media & entertainment, retail, and government. In 2020, the consumer electronics segment held the largest share of the optoelectronics market. The segment's largest market share is attributed to the growing adoption of optoelectronic components in the manufacture of consumer electronics and advancements in electronic devices such as smartphones, high-end cameras, smart television displays, LED projectors, organic LEDs, and flexible 3-D displays.

An in-depth geographical analysis of the optoelectronics market provides detailed qualitative and quantitative insights about the five major geographies (North America, Europe, Asia-Pacific, Latin America, and the Middle East & Africa) along with the coverage of major countries in each region. Asia-Pacific commanded the largest share of the optoelectronics market in 2019, followed by North America, Europe, Middle East & Africa, and Latin America. Asia-Pacific is also projected to record the highest CAGR during the forecast period. Asia-Pacific is the hub of semiconductor components manufacturing; the region houses the majority of key players operating in the optoelectronics market such as Renesas, Rohm Co., Ltd, Hamamatsu Photonics K.K., Samsung Electronics Co., Ltd., Sony Corporation, Panasonic Corporation, and Sharp Corporation along with other small regional players. Furthermore, growth in the healthcare, consumer electronics, and automotive industries is further expected to propel the demand for optoelectronic components in the region. China, Japan, South Korea, and India are the major market contributors in the region.

The key players operating in the optoelectronics market are Rohm Co., Ltd (Japan), Renesas (Japan), Vishay Intertechnology, Inc. (U.S.), Hamamatsu Photonics K.K. (Japan), Osram Licht AG (Germany), ON Semiconductor (U.S.), Cree, Inc. (U.S.), TT Electronics (U.K.), Samsung Electronics Co., Ltd. (South Korea), Sony Corporation (Japan), Panasonic Corporation (Japan), General Electric Company (U.S.), Sharp Corporation (Japan), Broadcom (U.S.), and Texas Instruments (U.S.).

Scope

Optoelectronics Market, by Device

LEDs

General LEDs

UV LEDs

OLEDs

Sensors

Phototransistors

Photodiodes

Photo Relays

Image Sensors

CMOS Image Sensors

CCD Image Sensors

Hybrid Image Sensors

Optical Sensors

UV Sensors

Infrared Components

Detectors

Transceivers

Emitters

Optocouplers

Photovoltaic Cells/Solar Cells

Displays

Others

Optoelectronics Market, by Device Material

Gallium Nitride

Gallium Arsenide

Gallium Phosphide

Silicon Germanium

Silicon Carbide

Indium Phosphide

Optoelectronics Market, by Application

Lighting

Security & Surveillance

Communication

Measurement

Displays

Others

Optoelectronics Market, by End User

Automotive

Consumer Electronics

Aerospace & Defense

IT & Telecommunication

Healthcare

Food & Beverage

Energy & Utilities

Residential

Industrial

Commercial

Others

Optoelectronics Market, by Geography

North America

U.S.

Canada

Europe

U.K.

Germany

France

Spain

Italy

Russia

Rest of Europe

Asia-Pacific (APAC)

China

India

Japan

South Korea

Indonesia

Australia

Rest of Asia-Pacific

Middle East & Africa (MEA)

UAE

Saudi Arabia

South Africa

Rest of the Middle East & Africa

Latin America

Brazil

Mexico

Argentina

Rest of Latin America

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