

Photonic Crystals Market Report by Type (1-D Photonic Crystals, 2-D Photonic Crystals, 3-D Photonic Crystals), Application (Optical Fiber, LED, Image Sensor, Solar and PV Cell, Laser, Discrete and Integrated Optical Component, and Others), End User (Industrial, Aerospace and Defense, Life Sciences and Healthcare, Research and Development (R&D), and Others), and Region 2024-2032

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Abstracts

The global photonic crystals market size reached US\$ 58.7 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 112.4 Billion by 2032, exhibiting a growth rate (CAGR) of 7.3% during 2024-2032.

Photonic crystals are a periodic dielectric optical nanostructure that is intended for forming the energy band structure to exhibit the motion of photons. They are utilized to manipulate, control and diffract the light. Currently, photonic crystals are available in three varying types, such as one, two, and three-dimensional (1D, 2D, and 3D). Among these the one-dimensional crystals are created by getting stuck together or layers of deposits, whereas 2D are designed by drilling holes and photolithography. On the other hand, 3D photonic crystals are formulated by drilling distinct layers, and assembling 2D layers.

Photonic Crystals Market Trends:

The widespread adoption of photonic crystals across various industrial verticals, such as information technology (IT), healthcare, life sciences, commercial, aerospace, and defense, is one of the key factors driving the photonic crystals market growth. In line

with this, the increasing demand for light-emitting diode (LED) products is considerably contributing to the market growth. Additionally, the growing demand for 2D photonic crystals in the commercial sector for interacting with ultracold atoms and engineering the light emission patterns, optical dispersion, and photon-mediated coherent communications is creating a positive outlook for the market. The numerous initiatives undertaken by the regulatory bodies of various nations for promoting the usage of green photonics to protect the environment by reducing the greenhouse gas (GHG) emissions caused by transport, land use, and agricultural activities is positively stimulating the market growth. Moreover, photonic crystals are also used in bio sources, optical fibers, image sensors, lasers, supercontinuum sources, photovoltaic (PV) cells, and discrete optical components, which, in turn, is driving the market toward growth. Other factors, such as the rising investments in research and development (R&D) activities in the field of electrical engineering, and the escalating deployment of photonic crystals for trapping solar energy for its more effective usage, are driving the market toward growth further across the globe.

Key Market Segmentation:

IMARC Group provides an analysis of the key trends in each sub-segment of the global photonic crystals market report, along with forecasts at the global, regional and country level from 2024-2032. Our report has categorized the market based on type, application and end user.

Breakup by Type:

- 1-D Photonic Crystals
- 2-D Photonic Crystals
- 3-D Photonic Crystals

Breakup by Application:

- Optical Fiber
- LED
- Image Sensor
- Solar and PV Cell
- Laser
- Discrete and Integrated Optical Component
- Others

Breakup by End User:

Industrial

Aerospace and Defense

Life Sciences and Healthcare

Research and Development (R&D)

Others

Breakup by Region:

North America

United States

Canada

Asia-Pacific

China

Japan

India

South Korea

Australia

Indonesia

Others

Europe

Germany

France

United Kingdom

Italy

Spain

Russia

Others

Latin America

Brazil

Mexico

Others

Middle East and Africa

Competitive Landscape:

The competitive landscape of the industry has also been examined along with the profiles of the key players being Corning Incorporated, Furukawa Electric Co. Ltd., GLOphotonics SAS, Gooch & Housego, Hamamatsu Photonics K.K., IPG Photonics Corporation, NKT Photonics A/S, Opalux Inc., Palo Alto Research Center Incorporated

(Xerox Corporation), Photonic Lattice Inc. (Photron) and Teledyne Technologies Incorporated.

Key Questions Answered in This Report

1. What was the size of the global photonic crystals market in 2023?
2. What is the expected growth rate of the global photonic crystals market during 2024-2032?
3. What are the key factors driving the global photonic crystals market?
4. What has been the impact of COVID-19 on the global photonic crystals market?
5. What is the breakup of the global photonic crystals market based on the application?
6. What are the key regions in the global photonic crystals market?
7. Who are the key players/companies in the global photonic crystals market?

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