+357 96 030922
info@marketpublishers.com

Metalens Market - A Global and Regional Analysis: Focus on Products, Applications, and Country-Level Analysis - Analysis and Forecast, 2025-2035

https://marketpublishers.com/r/M6F83FC374BBEN.html
Date: June 2025
Pages: 0
Price: US$ 4,900.00 (Single User License)
ID: M6F83FC374BBEN

Abstracts

Hard copy option is available on any of the options above at an additional charge of $500. Please email us at order@marketpublishers.com with your request.

This report will be delivered in 7-10 working days.

Global Metalens Market Overview

Metalenses are planar, sub-wavelength-patterned optics that replace bulky, multi-element lenses with a single metasurface. Commercial adoption is accelerating as wafer-level nano-imprint lithography (NIL) makes high-volume production viable, unlocking thinner camera modules, compact LiDAR, and new medical-imaging form-factors.

Global Metalens Market Segmentation by Application

The Global Metalens Market is segmented by end-use applications, each addressing optical systems that demand ultra-thin, high-performance, and increasingly mass-manufactured flat-lens solutions. The following application areas are covered in this report:

Global Metalens Market - Application Segments

Consumer Electronics: High-volume driver led by smartphone camera modules, AR/VR/MR headsets, and wearable devices seeking to collapse multi-element lens stacks into a single metasurface, saving space and weight while enabling

+357 96 030922
info@marketpublishers.com

new industrial-design form factors. Early adopters leverage wafer-level NIL production for sub-$1 cost per lens once scale is achieved. Consumer electronics has huge potential in global metalens market.

Healthcare & Medical Imaging: Endoscopes, capsule cameras, OCT probes, and point-of-care diagnostic chips benefit from sub-millimeter metalenses that deliver diffraction-limited resolution in confined spaces. Biocompatible TiO? or SiN platforms and chromatic-aberration control make metalens optics attractive for minimally invasive and disposable devices.

Automotive & LiDAR: ADAS and autonomous-vehicle LiDAR units need compact beam-steering and wavelength-selective optics; metalenses reduce system size and weight, withstand vibration, and offer polarization control for 905 nm / 1,550 nm emitters. HUD and in-cabin sensing cameras also target metalens integration for slimmer modules.

Aerospace & Defense: Satellites, UAV payloads, and thermal imagers value the mass reduction and multifunctionality (e.g., combined focusing and filtering) of mid-IR metalenses fabricated on chalcogenide substrates. Radiation-hard materials and broadband efficiency underpin interest for spaceborne optics.

Optical Communications: Silicon-photonics transceivers, fiber-to-chip couplers, and VCSEL collimators employ near-infrared metalenses to improve coupling efficiency and polarization management, supporting densification of data-center and 5G front-haul links.

Security & Surveillance: Compact board cameras and drone payloads require thinner optics for weight-constrained platforms; metasurface lenses offer fast apertures and integrated spectral filtering for low-light imaging.

Others: Industrial inspection, quantum-optics experiments, and scientific instrumentation exploring wave-front shaping and spin-selective focusing capabilities unique to metasurfaces.

Global Metalens Market Segmentation by Products

The market is segmented by operating wavelength and fabrication method, each serving distinct performance windows and production-volume requirements.

+357 96 030922
info@marketpublishers.com

Global Metalens Market - By Wavelength

Ultraviolet (UV) Metalenses: Materials such as AlGaN or TiO2 enable sub-250 nm operation for semiconductor inspection and fluorescence bio-imaging; tight feature sizes require e-beam or deep-UV lithography, limiting early volumes to R&D and niche tools.

Visible Metalenses: SiN or TiO2 platforms dominate 400–700 nm; primary target is smartphone/AR optics where single-element metasurfaces replace 6- to 8-stack plastic lenses, cutting module height by >30 %.

Near-Infrared (NIR) Metalenses: Si or GaAs metasurfaces optimized for 850-1,550 nm power consumer-depth cameras, eye-tracking in XR headsets, and short-range LiDAR; benefits include polarization control and wide FoV with a single layer.

Infrared (IR) Metalenses: Chalcogenide-glass or Ge/SiGe structures for 3-12 µm thermal imaging, gas sensing, and defense optics; low-loss mid-IR operation paired with athermal design reduces sensor-package volume for drones and handheld thermography.

Global Metalens Market - By Fabrication Method

Nanoimprint Lithography (NIL): High-throughput, stamp-based replication suited to consumer-electronics scale; enables

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

5. MARKET LANDSCAPE

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

6. RESEARCH METHODOLOGY

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Metalens Market - A Global and Regional Analysis: Focus on Products, Applications, and Country-Level Analysis - Analysis and Forecast, 2025-2035

Product link: https://marketpublishers.com/r/M6F83FC374BBEN.html

Price: US$ 4,900.00 (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/M6F83FC374BBEN.html