

United States Adaptive Optics Market By Component (Wavefront Sensor, Control System and Wavefront Modulator), By Type (Natural Guide Star Adaptive Optics, Laser Guide Star Adaptive Optics), By End User (Biomedical, Defense and Security, Astronomy, Manufacturing, Consumer Devices, and Communication), and By Region, Competition Forecast and Opportunities, 2027

<https://marketpublishers.com/r/U323010F0F6AEN.html>

Date: February 2023

Pages: 73

Price: US\$ 4,400.00 (Single User License)

ID: U323010F0F6AEN

Abstracts

The United States adaptive optics market is anticipated to grow at a significant CAGR for the forecast period, 2023-2027. The growing need for corrective eyewear, applications in ophthalmology and retinal imaging, and high-end investments by market players and leading authorities for R&D activities are the major drivers for the United States adaptive optics market. Also, increasing astronomical and biomedical applications and ongoing technological advancements are the other significant factors bolstering the market growth in the forecast period.

High Demand from Healthcare Sector Drives the Market Growth

According to the Centers for Disease Control and Prevention (CDC), more than 4.2 million Americans aged 40 years and older suffer are either suffering from low vision or are legally blind. The rise in the prevalence of age-related eye disorders in older adults comprises diseases such as diabetic retinopathy, age-related macular degeneration, glaucoma, and cataract. Age-related Macular Degeneration (AMD) and Retinitis Pigmentosa (RP) are the most general retinal degenerative diseases in the United States. Adaptive optics fundus camera helps observe the disruptions in the cone mosaic

of a patient with retinitis pigmentosa. The development of deformable mirrors to lower the complexity of adaptive optics- optical coherence tomography and make the equipment cost-effective and compact is expected to accelerate the demand for adaptive optics in the healthcare sector.

High-end investments by market players and leading authorities and the growing demand for high-resolution microscopy for various biomedical research operations are expected to create lucrative opportunities for the United States adaptive optics market.

Increasing Demand for High-Speed Internet Connection Supports Market Growth

The rise in the expenditure capacity of consumers is enabling them to afford a quality lifestyle. Free-space optical communication systems are where free space acts as a communication level between transceivers that are line-of-sight to transmit the optical signals. Free-space optical communication systems are utilized to transmit very high-speed multi-Gb/s large-capacity aerospace communications. It can establish a wireless, high-bandwidth connection between remote sites. FSO lasercom is in high demand in metropolitan cities where the laying of fiber optics cable is expensive. It offers numerous advantages over conventional radio frequency (RF) wireless communications technology such as low power requirements and higher bandwidth (data rates), portable nature, and smaller packaging. Advancements in free-space optical communication systems include high demand for bandwidths, use of the internet for Internet protocol television (IPTV), voice over Internet Protocol (VoIP), and the internet of things.

Free-space optical communication systems are prone to atmospheric-induced attenuation, and adaptive optics can restore the light waves, which is expected to improve FSO communication. Early adoption of advanced technologies in the United States and continuous efforts to develop high-speed internet connection for a seamless experience for consumers is expected to fuel the demand for the United States adaptive optics market for the next five years.

Market Segmentation

The United States adaptive optics market is segmented into component, type, end user, regional distribution, and company. Based on components, the market is divided into wavefront sensors, control systems, and wavefront modulators. Based on type, the market is bifurcated into natural guide star adaptive optics, laser guide star adaptive optics. Based on the end user, the market is divided into biomedical, defense and security, astronomy, manufacturing, consumer devices, and communication. To analyze

the market based on the region, the United States Adaptive Optics market is studied in major regions namely the southern region, western region, mid-western region, and north-eastern region.

Market Players

Thorlabs Inc., Teledyne e2v Ltd., Iris AO, Inc., Phasics Corporation, Boston Micromachines Corporation, Northrop Grumman Corporation, Adaptica S.R.L, Active Optical Systems, LLC, Imagine Optic SA, Benchmark Electronics, Inc., are the major market players operating in the United States adaptive optics market.

Report Scope:

In this report, the United States adaptive optics market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

United States Adaptive Optics Market, By Component:

Wavefront Sensor

Control System

Wavefront Modulator

United States Adaptive Optics Market, By Type:

Natural Guide Star Adaptive Optics

Laser Guide Star Adaptive Optics

United States Adaptive Optics Market, By End User:

Biomedical

Defense and Security

Astronomy

Manufacturing

Consumer Devices

Communication

United States Adaptive Optics Market, By Region:

South

West

Mid-West

North-East

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the United States adaptive optics market.

Available Customizations:

With the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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