

Adaptive Optics Market to Reach \$4.9 Billion by 2031 | CAGR 25.6%

WILMINGTON, NEW CASTLE, DE, UNITED STATES, August 25, 2025 /EINPresswire.com/ -- According to a new report published by Allied Market Research, titled, "[Adaptive Optics Market](#) Size, Share, Competitive Landscape and Trend Analysis Report, by Component, by Industry Vertical, by Application : Global Opportunity Analysis and Industry Forecast, 2021 - 2031." The global adaptive optics market was valued at USD 0.49 billion in 2021, and is projected to reach USD 4.9 billion by 2031, growing at a CAGR of 25.6% from 2022 to 2031.



The concept of adaptive optics is typically attributed to the optical systems that adapt to rectify optical effects that is caused by the medium between the object and its image. Adaptive optics leads to significantly sharper images by means of compensating for these optical effects. The requirements for an adaptive optics system include deformable mirrors, precision optics, special sensors, and high-speed computers. The high-speed computers are used to combine and control the entire system.

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Currently, the adaptive optics alongside Optical Coherence Tomography (OCT) is slowly penetrating the market because of its viability in giving enhanced and high-speed imaging. Advanced deformable mirrors are being created to exactly control the incident wavefront by reshaping a reflecting membrane with the assistance of precise magnetic actuators. For instance, in March 2022, Edmund Optics Inc. partnered with UltraFast Innovations GmbH, a cutting-edge manufacturer of complex laser optics components, to offer UFI's Extreme Ultraviolet (EUV) Attosecond Multilayer Mirrors, which allow extremely high precision in terms of wavelength/energy, spectral phase, and high efficiency for quickly repairing broken systems.

In addition, the adaptive optics market has witnessed significant growth in recent years, owing to an increase in demand for high-resolution microscopy in various biomedical research operations and growing usage of adaptive optics for clinical application and research. Furthermore, the companies operating in the adaptive optics market have adopted partnerships, investments, and product developments to increase their market share and expand their geographical presence. For instance, in March 2022, Benchmark Electronics, Inc. announced investment in new optical integration, photonics packaging, and photonics test capabilities at its RF and Photonics Center of Innovation in Phoenix. This allowed Benchmark to improve its offerings in providing advanced optical capabilities for applications such as high-speed digital communications, high performance computing, sensors, and laser systems. Similarly, in August, 2021, Benchmark Electronics, Inc. announced partnership with Aeye Inc., manufacturer of vision hardware, software, and algorithms for autonomous vehicles, to manufacture optical components and modules in Aeye's sensors. Benchmark also worked to reduce the size of the optics and ruggedize the LiDAR solutions through its hermetic sealing processes

The factors such as adoption in the field of astronomy, growth in prevalence of retinal degeneration diseases, and rise in demand for high-resolution microscopy in various biomedical research operations supplement the growth of the adaptive optics market. However, high initial cost of adaptive systems and complex design & optimization of space optical solutions are the factors expected to hamper the growth of the adaptive optics market. In addition, increase in demand for photonics enabled products to enhance system efficiency to aid growth and rise in R&D investments in advanced optics technology create market opportunities for the key players operating in the adaptive optics market.

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COVID-19 Impact Analysis:

The COVID-19 crisis is creating uncertainty in the market. Since the beginning of 2020, more countries have shut down their borders and limited transportation & travel to contain the coronavirus (COVID-19) outbreak, thereby creating impediments to international trade and transportation. Governments of different regions have announced total lockdown and temporarily shutdown of industries, adversely affecting the overall production and sales. Also, the COVID-19 outbreak severely impacted the adaptive optics market on a global level. In addition, the COVID-19 epidemic significantly adversely affected the worldwide adaptive optics market due to limitations on all industrial operations and global commerce activity.

Several businesses are active in designing and developing sophisticated optics systems for a variety of end-use industries, including those in the commercial, industrial, defense, medical, aviation, automotive, space, and other sectors. The medical (healthcare) sector witnessed a rise in demand for cutting-edge optical medical tools in 2020-2021 to give patients the finest

treatments possible. However, because of the interruption in supply chain analyses, COVID-19 had a modest influence on the market. 75% of all OEMs are small and medium-sized businesses, according to the Society of Photo-Optical Instrumentation Engineers (SPIE) organization's report 2020. The temporary halt caused by the COVID-19 outbreak has significantly impacted the income production of these small businesses. Due to this aspect, there was little investment made in R&D efforts.

Key Findings Of The Study :

By component, the wavefront modulator segment dominated the global adaptive optics market in terms of growth rate.

By industry vertical, the others segment dominated the global adaptive optics market in terms of growth rate.

By application, the others segment dominated the global adaptive optics market in terms of growth rate.

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The leading players operating in the adaptive optics market are Active Optical Systems LLC, Adaptica, Aka Optics SAS, ALPAO, Baker Adaptive Optics, Benchmark Electronics, Inc., Boston Micromachines Corporation, Edmund Optics Inc., Electro Optic Systems Pty Ltd., Flexible Optical B.V., Imagine Optic, Iris AO, Inc., Northrop Grumman Corporation, Phasics, Synopsys, Inc., Teledyne e2v, and Thorlabs, Inc.

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