# Atomic Force Microscope (AFM) Market Valued at USD 463.7M in 2020, Projected to Reach USD 714.3M by 2028 with 5.60% CAGR

*Atomic Force Microscope are in high demand in the field of Nano medicine, that is focused on pathological tissue analysis, early diagnosis, and drug delivery.*

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NEW YORK CITY, NY, UNITED STATES, June 9, 2023 /EINPresswire.com/ -- The global Atomic Force Microscope (AFM) Market was valued at USD 463.7 Million in 2020. It is projected to reach USD 714.3 Million by 2028, growing at a Compound Annual Growth Rate (CAGR) of 5.60%.

There is a high demand for atomic force microscopes in the field of Nano medicine, which focuses on analyzing pathological tissues, imaging, early diagnosis, and drug delivery. These microscope systems provide atomic-level resolution of the surface topography of materials using a nano-scale probe that comes into contact with the sample being examined. They also offer precise measurements of material properties, feature sizes, chemical properties, electrical information, and other sample characteristics at the nanoscale.

Atomic force microscopes find applications in various areas, such as biological and material research, semiconductor industry, LED, solar cells, battery technology, polymers, data storage, hard drive manufacturing, and pharmaceutical product development. Additionally, atomic force microscopy (AFM) is extensively used in drug discovery and for visualizing, probing, and manipulating biological systems in living cells. Government support for nanotechnology and nanoscience research and development plays a crucial role in driving the growth of the atomic force microscopy market.

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The growth of the AFM market can be attributed to its versatility and dominance in studying samples beyond the nanoscale. AFMs enable the acquisition of three-dimensional topography,

fulfilling the needs of scientists and engineers by providing measurements for a wide range of surfaces.

Segments Covered in the Report –

The global atomic force microscope (AFM) market is segmented based on mode, grade, and applications. In terms of mode, the market is categorized into Contact AFM, Non-contact AFM, Dynamic contact AFM, and Tapping AFM.

Contact AFM, also known as contact mode AFM, involves direct physical contact between the AFM probe and the sample under examination. Non-contact AFM, on the other hand, uses a non-contact mode where the probe does not physically touch the sample surface. Dynamic contact AFM combines elements of both contact and non-contact modes, utilizing intermittent contact between the probe and the sample. Tapping AFM, also called intermittent contact mode AFM, involves the probe gently tapping the sample surface.

In terms of grade, the market includes Research Grade and Industrial Grade AFMs. Research Grade AFMs are primarily used in academic and research institutions for scientific studies and experimentation. Industrial Grade AFMs, on the other hand, are designed for industrial applications and are often used in manufacturing processes and quality control.

The applications of AFMs span across various fields. In the life sciences and biology sector, AFMs are extensively used for studying biological samples, such as cells, proteins, and DNA. AFMs also find significant application in the semiconductors and electronics industry, where they are used for analyzing semiconductor materials, characterizing thin films, and examining microelectronics components.

Nanomaterial science is another prominent area where AFMs play a crucial role. They enable researchers to study and manipulate nanoscale materials, such as nanoparticles, nanotubes, and nanowires. Additionally, AFMs find applications in other fields beyond the mentioned categories, including materials science, surface analysis, and forensic science, among others.

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Strategic development:

The Atomic Force Microscope (AFM) market is witnessing several strategic developments to cater to evolving industry needs and technological advancements. These developments aim to enhance the capabilities and functionalities of AFM systems, broaden their applications, and improve overall market competitiveness. Here are some of the key strategic developments in the AFM market:

1. Technological Advancements: AFM manufacturers are focusing on continuous technological advancements to enhance the performance of their systems. This includes improvements in probe design, resolution, imaging speed, automation capabilities, and integration with complementary techniques. Advancements in AFM imaging modes, such as high-speed imaging, multi-modal imaging, and advanced imaging algorithms, are being pursued to provide more comprehensive and accurate analysis of samples.

2. Miniaturization and Portability: There is a growing demand for miniaturized and portable AFM systems to enable in-situ and on-site measurements. Manufacturers are developing compact and handheld AFM devices that offer high-resolution imaging capabilities while being more portable and user-friendly. These developments aim to expand the accessibility and usability of AFM technology in various settings, including field applications and point-of-care diagnostics.

3. Integration with Other Techniques: AFM is being integrated with complementary techniques to provide a more comprehensive analysis of samples. For example, the combination of AFM with spectroscopic techniques, such as Raman spectroscopy and infrared spectroscopy, allows simultaneous imaging and chemical characterization of materials. Additionally, the integration of AFM with scanning electron microscopy (SEM) or transmission electron microscopy (TEM) enables correlated imaging at multiple length scales, providing valuable insights into sample structures and properties.

Competitive Landscape:

In this market study, several companies have been considered and profiled. One of the key players is Bruker Corporation, based in the USA. Bruker is renowned for its development, manufacturing, and distribution of high-performance scientific instruments and analytical and diagnostic solutions. Their instruments are utilized for determining the structural properties of chemical, biological, and industrial samples. Bruker operates through two business segments: Bruker Scientific Instruments (BSI) and Bruker Energy & Supercon Technologies (BEST).



In 2018, BSI accounted for approximately 90% of the company's total revenues. Other notable companies profiled in the study include Zao NT-MDT, Park Systems, WITec Wissenschaftliche Instrumente und Technologie GmbH, Asylum Research (Oxford Instruments), Nanonics Imaging, Nanosurf, Hitachi High-Technologies Corporation, Keysight Technologies, and Concept Scientific Instruments AFM.

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