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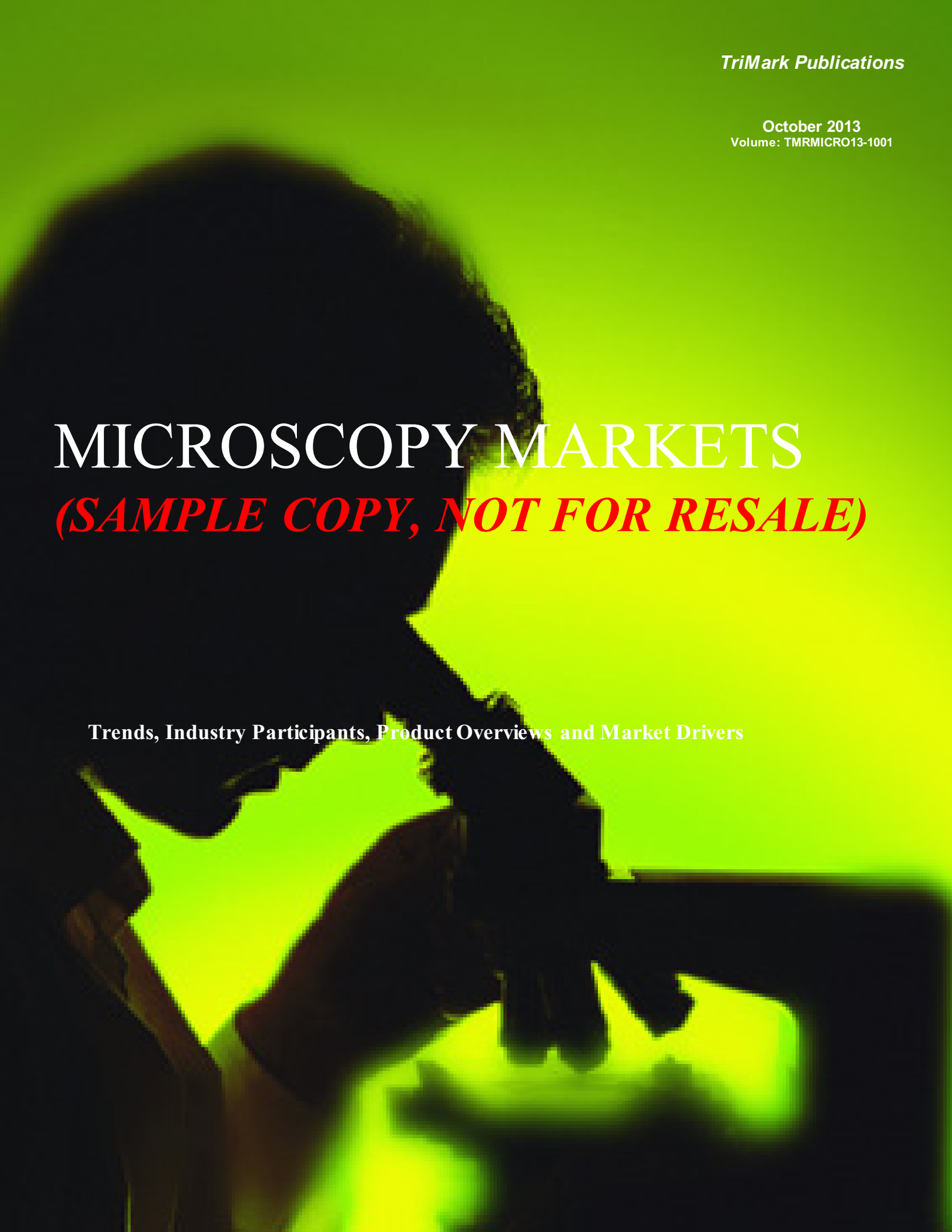

MICROSCOPY MARKETS

(SAMPLE COPY, NOT FOR RESALE)

Trends, Industry Participants, Product Overviews and Market Drivers

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1. Overview

1.1 Statement of Report

The microscopy market is a complex, high-technology market spanning many different sectors. It is a challenging market due to the complexity of the instrumentation, as well as the intense technical support required to maintain the customer base. This report describes major microscope market segments and includes examinations of light, confocal, electron, ion and scanning probe microscopes. The market segment analysis presents professional microscopes used in industrial, clinical and academic laboratories, and the companies that produce them. Companies in the U.S. and worldwide are analyzed and discussed, with specific emphasis on those companies that are actively developing and marketing microscopy devices. This report covers the following categories of microscopes:

- Light microscopes.
- Confocal microscopes.
- Scanning probe microscopes.
- Fourier transform infrared microscopes.
- Ultraviolet microscopes.
- Scanning acoustic microscopes.
- X-ray microscopes, Raman microscopes and microtomes.
- Electron microscopes and those using other charged particles.

1.2 Scope of This Report

This examination provides an overview of individual microscopy markets that are believed to possess the elements that will lead to sustained growth rates for the foreseeable future. The current status of each market is assessed, with projections for market size. An overview of microscopes and related supplies marketed by major companies is additionally provided for each market segment. The market size, growth rates and market components for instruments used for microscopy are also analyzed. Market figures on the current value of the microscopy market are taken from the most recently available data of the global medical products industry. Company-specific information, including sales figures, product pipeline status and R&D trends, is provided throughout the report. This study provides the following information:

- Assesses the microscopy market drivers and bottlenecks from the perspective of the medical and scientific communities.
- Discusses the potential benefits of the microscopy market for various sectors of the medical and scientific communities.
- Establishes the current total market size and future growth of the microscopy market and analyzes the current size and growth of various segments.
- Provides current and forecasted market shares by company.
- Discusses profit/business opportunities by imaging segment.
- Provides strategic recommendations for near-term business opportunities.
- Assesses current commercial uses of the microscopy technology platforms.
- Reviews microscopy product business models.

This report concentrates on the microscopy market segment in important worldwide markets, such as the U.S., Japan and Europe. The market for microscopy is reviewed for the clinical and research hospital market, rather than the heavy industrial uses of microscopy imaging. The focus is on end-user markets, including hospitals, research facilities, freestanding clinics and equipment-leasing companies. The review defines the dollar volume of sales of the market, both worldwide and in the U.S. and analyzes the factors that influence the size and growth of the market segments. Separately, the report provides a description of the instruments, reagents, and supplies marketed by major companies in the microscopy segment. The analysis discusses the market size, growth rates and market components for instruments, reagents, controls and consumables used in microscopy.

1.3 Objectives

The principal objectives of this study are to:

- Identify viable technology drivers through a comprehensive evaluation of various platform technologies for microscopes.
- Obtain a complete understanding of the use of microscopy—predictive, screening, prognostic, diagnostic and monitoring—from its basic principles to its applications.
- Discover feasible market opportunities by identifying high-growth applications in different imaging areas, with a focus on the largest and expanding markets in microscopy.
- Focus on global industry development of microscopy through an in-depth analysis of the major world markets for microscopic imaging, including growth forecasts.
- Establish the essentials of the microscopic imaging market, including definitions, processes and trends.

Activity and trends in the microscopy market are also discussed, including the number of institutional placements and factors that influence purchasing activity. Each company is discussed in depth, with sections on its history, product lines, business and marketing analysis and a subjective commentary on the company's position in its market. Report facts at a glance:

- A comprehensive, up-to-date report describing and analyzing microscopy markets.
- Data-intensive research—an imperative for the serious player.
- Focused identification of key microscopy market segments.
- Reader-friendly tables, charts and text formats.
- Profiles of leading companies, covering key and niche players worldwide.
- Market data, tables, shares, analyses, trends and more.
- Research assisted by many key players worldwide.

1.4 Methodology

The author of this report is a Ph.D. in biochemistry from the University of Minnesota, with many decades of experience in science writing and as a medical industry analyst. He has been a senior director of several large regional and national healthcare laboratories. The senior editor is a retired college professor with more than three decades of experience in teaching, biochemistry, biochemical pharmacology, biotechnology, genetics and cell biology.

Company-specific information is obtained mainly from industry trade publications, academic journals, news and research articles, press releases and corporate websites, as well as annual reports for publicly-held firms. Additionally, sources of information include publically available reports, publications, and other resources. Where possible and practicable, the most recent data available have been used.

Some of the statistical information was taken from Biotechnology Associates' databases and from TriMark's private data stores. The information in this study was obtained from sources that we believe to be reliable, but we do not guarantee the accuracy, adequacy or completeness of any information or omission or for the results obtained by the use of such information. Key information from the business literature was used as a basis to conduct dialogue with and obtain expert opinion from market professionals regarding commercial potential and market sizes. You should view www.trimarkpublications.com for information related to life science instrumentation markets.

Primary Sources

TriMark collects information from hundreds of Database Tables and many comprehensive multi-client research projects, as well as Sector Snapshots that it publishes annually. TriMark extracts relevant data and analytics from its research as part of this data collection.

Secondary Sources

TriMark uses research publications, journals, magazines, newspapers, newsletters, industry reports, investment research reports, trade and industry association reports, government-affiliated trade releases and other published information as part of its secondary research materials. The information is then analyzed and translated by the Industry Research Group into a TriMark study. The Editorial Group reviews the complete package with product and market forecasts, critical industry trends, threats, and opportunities, competitive strategies and market share determinations.

TriMark Publications Report, Research and Data Acquisition Structure

The general sequence of research and analysis activity prior to the publication of every report in TriMark Publications includes the following items:

- Completing an extensive secondary research effort on an important market sector, including gathering all relevant information from corporate reporting, publicly-available data and proprietary databases.

- Formulating a study outline with the assigned writer, including important items, as follows:

    - Market and product segment grouping, and evaluating their relative significance.
    - Key competitors' evaluations, including their relative positions in the business and other relevant facts to prioritize diligence levels and assist in designing a primary research strategy.
    - End-user research to evaluate analytical significance in market estimation.
    - Supply chain research and analysis to identify any factors affecting the market.
    - New technology platforms and cutting-edge applications.

- Identifying the key technology and market trends that drive or affect these markets.

- Assessing the regional significance for each product and market segment for proper emphasis of further regional/national primary and secondary research.

- Completing a confirmatory primary research assessment of the report's findings with the assistance of expert panel partners from the industry being analyzed.

1.5 Aims of This Report

This report was developed with the aim of presenting the following body of knowledge:

- Summaries of various microscopy technology platforms, including light, confocal, electron, ion and scanning probe microscopes.
- Market segment size, growth-rate projections, major players and competitive strategies for the microscopy market segment.
- In-depth descriptions of companies in the field and trends in technology and business that impact this market segment.
- Detailed comparative analyses of individual products.
- Descriptions of attachments used in microscopy.
- Accurate and current R&D information from the major microscopy companies, including descriptions of products currently in development, perceived medical and other market needs, market outlook, economic considerations, and pricing for the microscopy market segment.
- Identification of unmet needs in current microscopy development markets and to what extent each product meets those needs.
- Award winning microscopes and accessories in [redacted].
- The business performance of the four global leaders in microscopy market.

1.6 Executive Summary

There is a perception that the traditional light and electron microscopy will gradually be replaced by the newly emerging Atomic Force Microscopy (AFM) and Raman confocal systems. However, this perception of demise of these traditional devices is greatly exaggerated. As each technique creates an image via a unique interaction between the probe (photons, electrons, atomic forces, etc.) and the sample, each reveals its own part of the puzzle. Therefore, not only are traditional techniques not going away, they are thriving and contributing to a growing trend toward correlative microscopy in which multiple microscopy and/or spectroscopy techniques combine to investigate multiple, integrated facets of a problem.

At $[redacted] in [redacted], the global microscopy and accessories market is expected to experience double-digit growth percentages in the next few years to reach $[redacted] in [redacted]. With the help of software engineers and embedded controls, and the support network provided by manufacturers themselves, microscopy firms have reached new customer segments, helping to grow the entire industry. North American market alone accounts for about [redacted]% of the global microscopy and accessories market. Thus, microscopy market includes two segments: microscopes and accessories. Accessories account for nearly [redacted]% of the total microscopy market. Currently, microscopes find their applications in four major areas: semiconductor industry, life sciences, material sciences and nanotechnology. These four sectors account for [redacted]%, [redacted]%, [redacted]% and [redacted]% of the global microscopy market, respectively.

Overall picture of the current microscopy industry is that, smaller; faster; and more economical devices are still key drivers. Vendors of both scanning electron microscopy (SEM) and AFM are witnessing a major shift in microscope design away from generic stands toward systems more dedicated to specific application areas. Life sciences and natural resources such as oil, gas, and minerals are the major targets for these new designs. Scientifically, the shift is mainly targeted at imaging smaller structures, specifically single molecules in the life sciences and atoms in the world of materials. In almost all areas of applications, structure and function relationships have never been more important.

Currently, research in proteins and genetics is stimulating development in all sectors of microscopy, not just optical microscopy. The eventual goal is to view and track single molecules as they move through a specific process in the cell. Optical microscopy has made tremendous progress toward achieving that goal, skirting Abbe's diffraction limit using new super-resolution techniques such as structured illumination, photoactivated light microscopy (PALM), stochastic optical reconstruction microscopy (STORM), and stimulated emission depletion microscopy (STED) to routinely map structures as small as [redacted] nm to [redacted] nm. At these levels, system stability has an enormous impact on image information. The controlling factors such as stage drift or thermal drift of the objective are only just the tip of the iceberg. To meet the latest new requirements, Mad City Labs has developed Nano-Cyte LC. Using the proprietary three-dimensional (3D) nanopositioning and fiduciary markers within the sample, the economical and retrofittable system offers dynamic, system level stabilization particularly well suited for single-molecule studies such as monitoring the rates of RNA transcriptions.

Currently, hyperspectral imaging and Raman have come to have their own niche markets and are enjoying strong growth, but the real news on the microspectroscopy front comes from cathodoluminescence (CL). Until the recent past, CL was only available as an SEM add-on and was confined to select geology and semiconductor applications. AttoLight has now developed a CL that is available as a fully integrated, compact optical/SEM/CL platform offering nanoscale spatial resolution across the full spectrum, with a [redacted]-µm field of view and [redacted] brighter signal. Field-retrofittable kits provide upgrades to a 9-axis cryostat stage and pico-second time-resolved CL. The new combination is predicted to carry CL into the mainstream for advanced material studies in photonics, glasses, and ceramics as well as innovative biological applications.

Although biologists have used Macs extensively in microscopy, NT-MDT was the first manufacturer in the industry to commercialize on a Mac platform. The company's Solver Next and NanoEducator run on Macs, with applets to transfer images to "i" devices (iPhone, iPod, iPad) and conduct simple measurement. In the new InTouch Scope, the 6010LA, JEOL has used Windows 7 to take the Mac concept a step further. Images on the 6010LA's displays can be Mac-nipulated using commands to enlarge and scroll around the field, while a special iPad applet permits researchers to remotely monitor longer experiments such as mapping, working in their offices or other locations, and then return to the microscopy suite only when they see that the experiment is complete.