
The microscopy market: Delivering to the desktop

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WELLESLEY, Mass. – Worth about \$2.4 billion in 2008, the global market for microscopes and accessories is projected to fall to \$2.1 billion in 2009, then to rise to \$3.6 billion in 2014 with a compound annual growth rate of 11.5 percent, according to a report from market analysis firm BCC Research.

The July 2009 report titled *Microscopy: The Global Market* indicates that the microscope segment, which makes up the bulk of the market, is expected to fall from \$2 billion in 2008 to \$1.7 billion in 2009 and then to rebound to \$3.1 billion in 2014, with a compound annual growth rate of 12.4 percent. The accessories and supplies segment, the remainder of the market, which experienced sales of \$360 million in 2008, is projected to increase to about \$374 million in 2009 and to \$513 million in 2014, for a compound annual growth rate of 6.5 percent.

“The global microscopy market is a complex landscape, encompassing at least eight sectors,” noted Barbara Foster, master microscopist, president and senior strategic consultant for Microscopy & Imaging Place Inc., based in McKinney, Texas. “It includes instruments such as the light, confocal, scanning probe (SPM), and scanning and transmission electron (SEM and TEM) microscopes; components such as cameras, software and hardware; and accessories such as stages, slides and illuminators,” she said. “This heterogeneity is the key challenge in accurately assessing this market,” said Foster, who is experienced in new product and company launches.

When asked about the overarching business trend in today’s market, Foster responded that the most critical concern is the drive to get new products to market faster. “Years ago, we had the luxury of five to 10 years for commercialization. Today, new sectors mature in two years. Manufacturers need to be alert to the trends, to be more flexible and responsive.” She noted that new funding is emerging as science has become more politically driven, especially in nano- and clean technologies. Despite the current economic downturn, she predicts a rosy future.

Hybrids lead the way

“Over the past five years, we’ve seen a major shift toward integrated instrumentation,” observed Foster, “especially combining spectroscopy with imaging.” For nearly four decades, SEMs combined imaging with elemental analysis. The new technologies incorporate Fourier transform infrared (FTIR) and Raman to add molecular analysis. Renishaw’s Structural and Chemical Analyzer pushes this envelope, uniting light microscopy, SEM and SPM with confocal Raman spectroscopy to enable morphological, elemental, chemical, physical and electronic analysis on one platform, eliminating the laborious and time-consuming process of moving the sample between instruments.

On the FTIR front, Smiths Detection's IlluminatIR accessory combines FTIR with the power of conventional light microscopy modes such as polarized light, fluorescence, and phase contrast and has been well accepted in polymer, pharmaceutical and forensics labs.

Foster said that high-throughput microscopy, used, for example, for characterizing paints and polymers, is becoming an important tool in the industrial, pharmaceutical and biotechnology sectors, while microscopes that can view whole live animals and critical organs in 3-D, all within the context of bodily systems, constitute a growing segment for the biomedical market.

From nanotechnology to new accessories

Nanotechnology has a double effect on microscopy, according to Foster. It extends microscopy into nanobiology and nanomaterials, and it enables smaller, sleeker, faster and more economical instrumentation.

Simplified instrumentation for broader mainstream use is another trend. "The last two years have seen a proliferation of desktop SEMs," cited Foster. "And SPMs, like the Solver Next dual-headed atomic force/scanning tunneling microscope from NT-MDT, are now joining the fray."

Microscope accessories showing promise in the market include LED illumination for fluorescence on light microscopes (Zeiss Colibri and CoolLED); a stage from the Zeiss SEM group that permits translation from a light microscope to a scanning electron microscope without losing sample location; special cameras with rapid acquisition capabilities for capturing motion in low-light environments (MotionX); Exfo's X-Cite radiometer, which measures illumination at the sample itself; and CytoViva's adapter for light microscopy, which drops the limit of resolution from ~300 nm to less than 90 nm and is especially valuable for intracellular live-cell work such as the study of apoptosis.

Greatest challenges?

"The microscopy business is not for the faint of heart," Foster noted. "On one side, manufacturers are being asked for affordable, easy-to-use instruments that will just about sell themselves and, on the other, for complex, hybrid instrumentation that requires intense technical support, all while making a profit." For the end user, the challenge is acquiring the science and practical expertise to adapt to more complex sample preparation and the growing arsenal of system components.