

Videomicroscopy: The Future Of Magnified Imaging

by Jonelle Kearney

Introduction

Two of the most popular ways to capture live magnified images in visual inspection are by way of photomicrography and videomicroscopy. Photomicrography, or film-based imaging, involves the use of still cameras that are integrated into the optical systems of microscopes. This technology was developed in order to store microscopic images as photographic prints for research, industrial quality control and biomedical applications.

As video equipment developed, it became apparent that a video camera and video printer could, in many cases, replace the still camera and film. Because the cost of photomicrography and videomicroscopy can be similar, applications become the determining factor in purchasing a system.

Advantage of photos over video prints

Instant film or 35 mm film can obtain several times more resolution than color video prints. While video systems are becoming more resolute, film manufacturers continue to aim even higher. The race may never be over, which bodes well for the consumer: resolutions for both technologies will continue to increase.

Film also offers greater sensitivity to fluorescent, darkfield, and other low light level images. However, with the introduction of components such as image contrast controllers, video systems are now able to enhance most low contrast images.

Why should video bother competing with film? Primarily because there are more reasons to use video than there are to use film. If video systems can address the advantages of film, it could become the most widely used medium.

Advantages of video microscopy

Video offers quick image storage on print media, still video, floppy disk or video tape. Producing a video print is easier than producing a film print, in that what is viewed on the monitor (colors, illumination, measuring lines, etc.) resembles quite closely what will be printed. If lighting needs to be changed, for example, illumination can be adjusted before a video print is made. Video images may be stored as consecutive moving images using a video recorder. Images may be stored at least every 1/30th of a second. It is relatively simple to transfer the video camera from its copy stand and move it to a stereomicroscope, then to a compound microscope or macroscope. It is not only inconvenient to transport a film-based photomicrographic camera, but the camera or its mounting may not be compatible with more than one microscope. With the proper equipment, video technology allows for storage, manipulation, analysis and transmission over telephone lines. Video equipment continues

to improve in performance while dropping in price. Video marking components can be integrated with a video camera and monitor to overlay graphics on an image before the image is printed. Video marking is not only a tool for annotating prints for later analysis, but also a tool for presenting a live image for group discussion or for training. Video measuring components may also be integrated with a video system that allows measurement of live images displayed on the monitor. Video prints can be made of the image along with the measuring line results.

The value of video prints

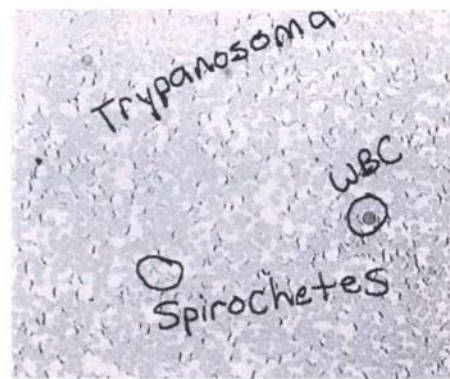
Thermal dye sublimation video printers

do not require caustic chemicals that are found in instant film, nor do they require a throw away for each print. A color video print can be made for less than half the cost of a color 3 × 4 instant photo print.

About the author

Jonelle Kearney is a Technical Writer with Boeckeler Instruments, Inc. Contributing to this article were John Ossi of Bunton Instrument Co., Inc., and Gregg Kleinberg of Boeckeler Instruments, Inc.

Boeckeler Instruments manufactures numerous products for video microscopic imaging, including the IMG-™100 image contrast controller, the VIA-50J video image marker, and the VIA-160AI



Freehand drawing is one marking feature available with videomicroscopy.

video area measurement system. More information about these products is available from:

Boeckeler Instruments, Inc., 3280 E. Hemisphere Loop, Bldg. 114, Tucson, AZ 85706.

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