



# Electro-Optical Microscopy: New Age of Inspection

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## Conventional Optical Microscopes

**Disadvantages of Optical  
Microscopes**

- Limited Depth-of-Field
- Lack of Versatility
- Poor Illumination
- Discrete Magnification Adjustment
- Eye Fatigue

**Optical microscope + CCD  
camera**



## Digital Microscopes: The New Standard



## Digital Microscopes: The New Standard

### 1 Color CCD camera <High-density pixels in a compact design>

The pixel density has been increased to allow for higher resolution. The hand held camera is designed for ease of use during observation.



### 2 Built-in illumination <Ideal for image capturing>

The camera includes illumination that is applied directly from the lens position. It ensures ideal illumination at all times.

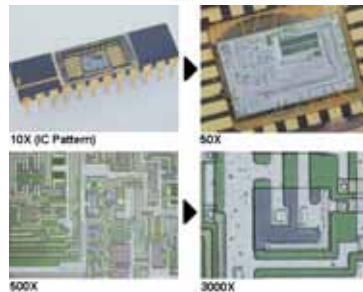


## Digital Microscopes: The New Standard

### 3 Zoom lens <Easily adjustable field-of-view>

Various zoom lenses are available to quickly change the magnification from low to high.

Selecting the best field of view with the desired magnification allows efficient observation.



## Digital Microscopes: The New Standard

### 4 Five-axis stand <Choose the optimal perspective>

In addition to the observation in the X, Y, and Z directions, the camera can be tilted at any angle and the stage can be rotated 360°

Moreover, this stand is designed not to let the target go out of the field of view even when the lens is tilted or the stage is rotated. Consequently, targets can easily be observed from any angle without any complicated adjustment. There are many cases where this has led to the discovery of defects and features that had previously been overlooked.



## Digital Microscopes: The New Standard

### 5 LCD monitor <Higher resolution, wider view>

The controller is equipped with a 15-inch, high-resolution LCD monitor with 1600 x 1200 pixels. The viewing angle of 170° ensures clear images that can be seen from an angled position. This allows several people to simultaneously monitor and discuss the images.



## Digital Microscopes: The New Standard

### 6 Hard disk drive <Increased capacity>

The image data can be saved in the hard disk drive built into the controller. Up to 575,000 images can be stored.



### 7 Media drive/USB <Common, large capacity media>

The controller is equipped with a CD-R/RW drive. Images can be recorded on a CD for data backup. USB ports support external data storage.



## Digital Microscopes: The New Standard

### 8 Operation panel <Simple interface>

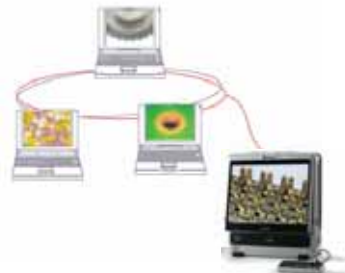
All functions can be intuitively selected using a mouse and an icon driven menu, allowing even beginners to fully operate the system. The operation panel can activate common functions with the push of a button.



## Digital Microscopes: The New Standard

### 9 PC link / network connection <Network-ready>

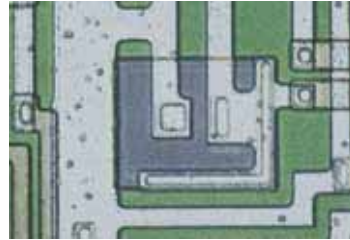
The controller has a LAN port supporting 100 baseTX. This allows the connection to a local network, so that images can be monitored from a remote PC. It is also possible to connect the controller to a PC via USB 2.0 port to transmit image data with special software.



## Digital Microscopes: The New Standard

### 10 Measurement <Conversion into numbers / statistics>

The controller is equipped with various measurement functions. Distance, Angle, Radius, and many additional measurements can be taken by clicking on the image.



## Why Choose Digital Microscopes?

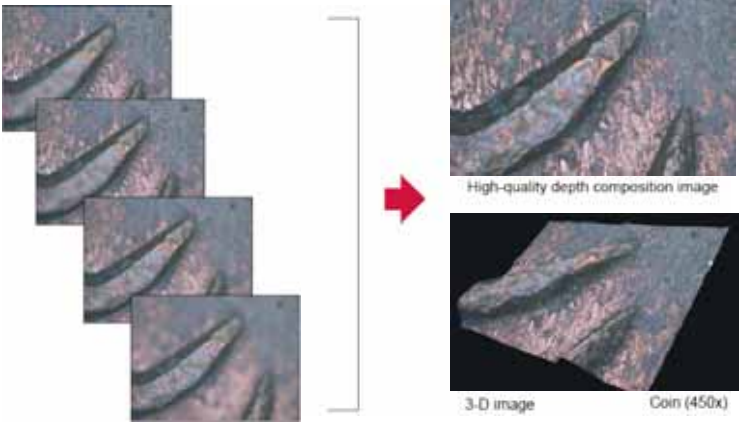
### REASON # 1

Large depth-of-field



## REASON # 2

### Image composition



High-quality depth composition image

3-D image      Coin (450x)

## REASON # 3

### High-range zoom lens



DIGITAL MICROSCOPE

OPTICAL MICROSCOPE

10X (IC Pattern)      50X      500X      3000X

## REASON # 4

Samples can be viewed in their natural state



Camera with built-in illumination and portable controller



## REASON # 5

Samples can be observed at any angle





## REASON # 6

Integrated illumination simplifies setup



## REASON # 7

Images and text data can be saved in the digital microscope



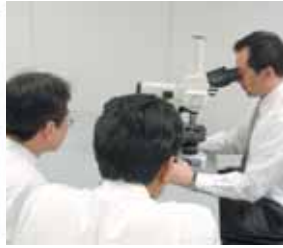
## REASON # 8

Several people can observe a sample  
simultaneously

DIGITAL MICROSCOPE

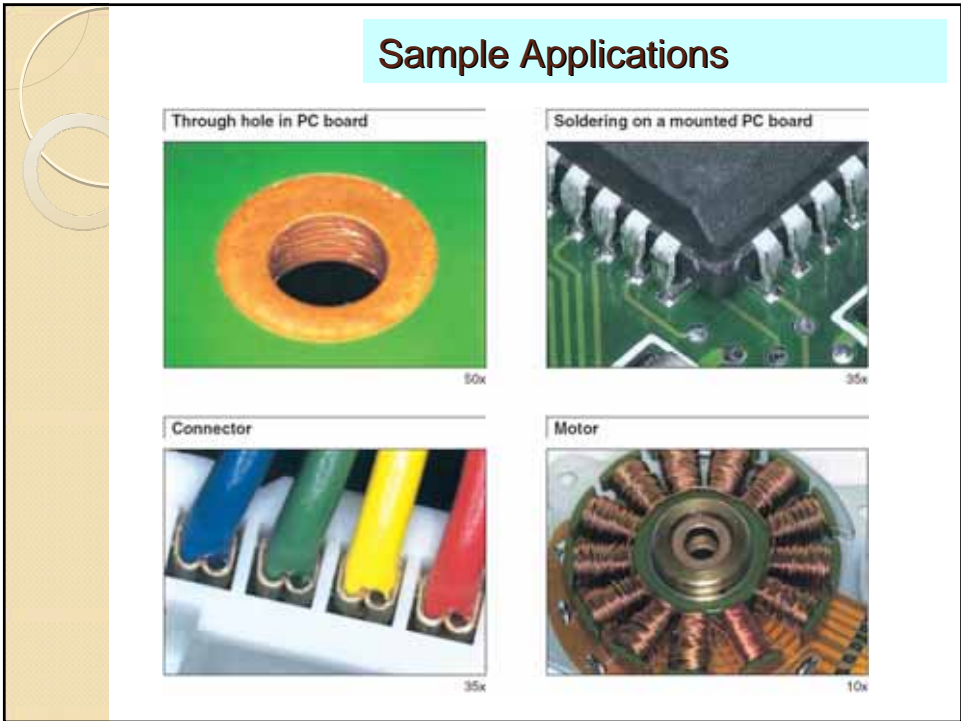
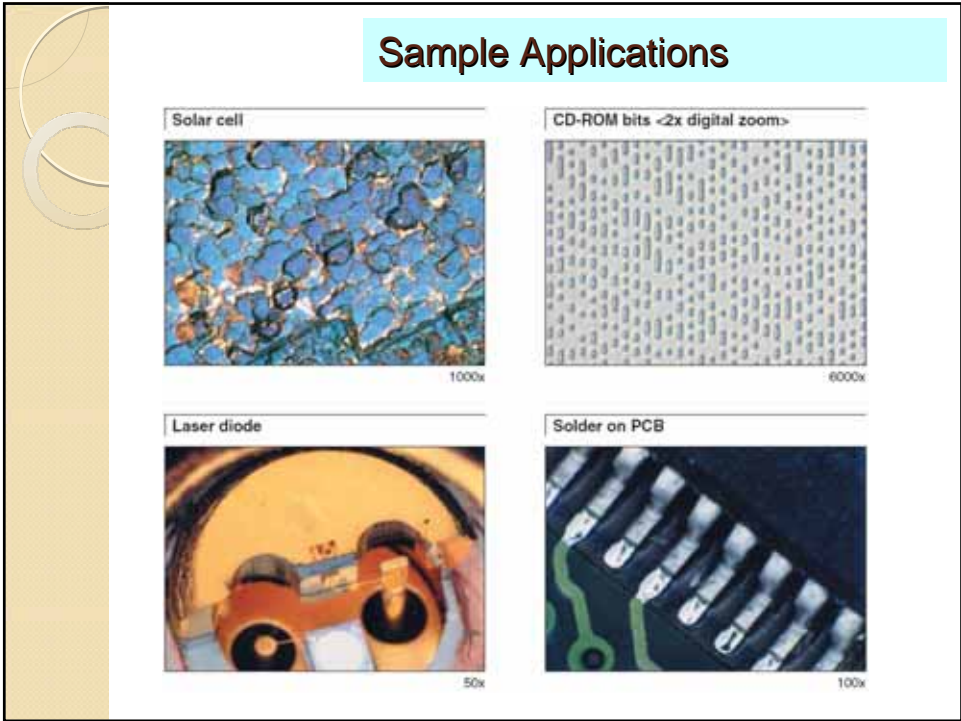


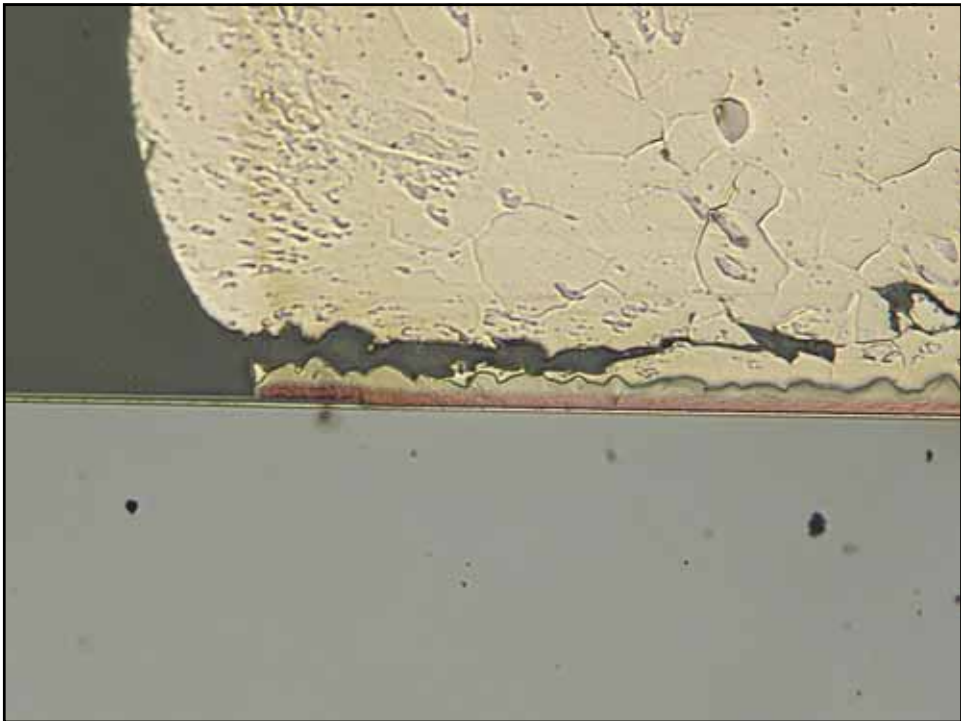
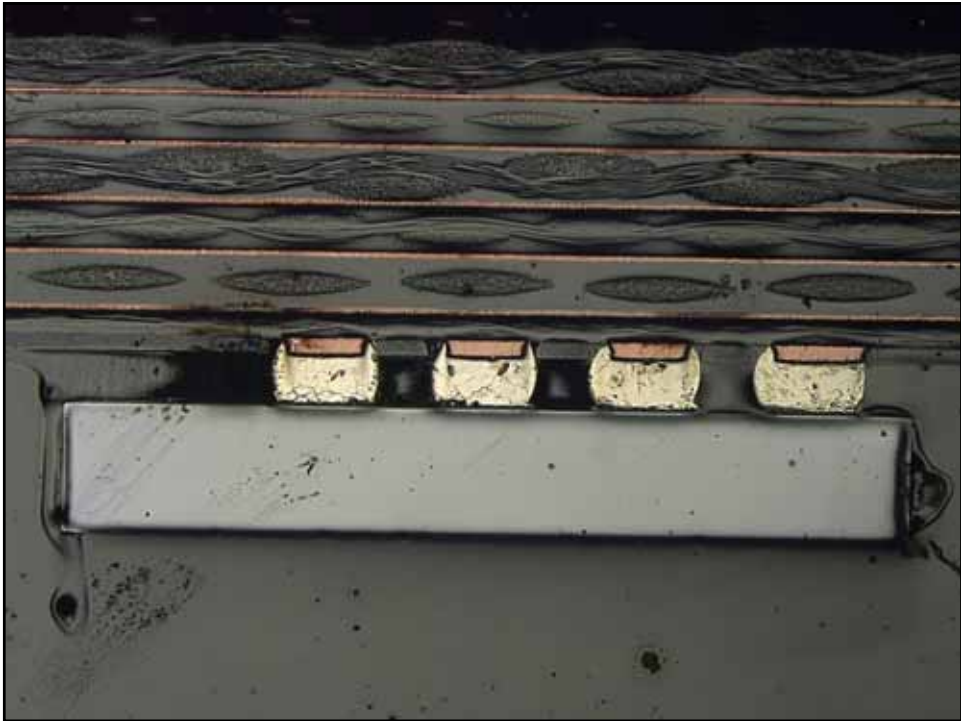
OPTICAL MICROSCOPE

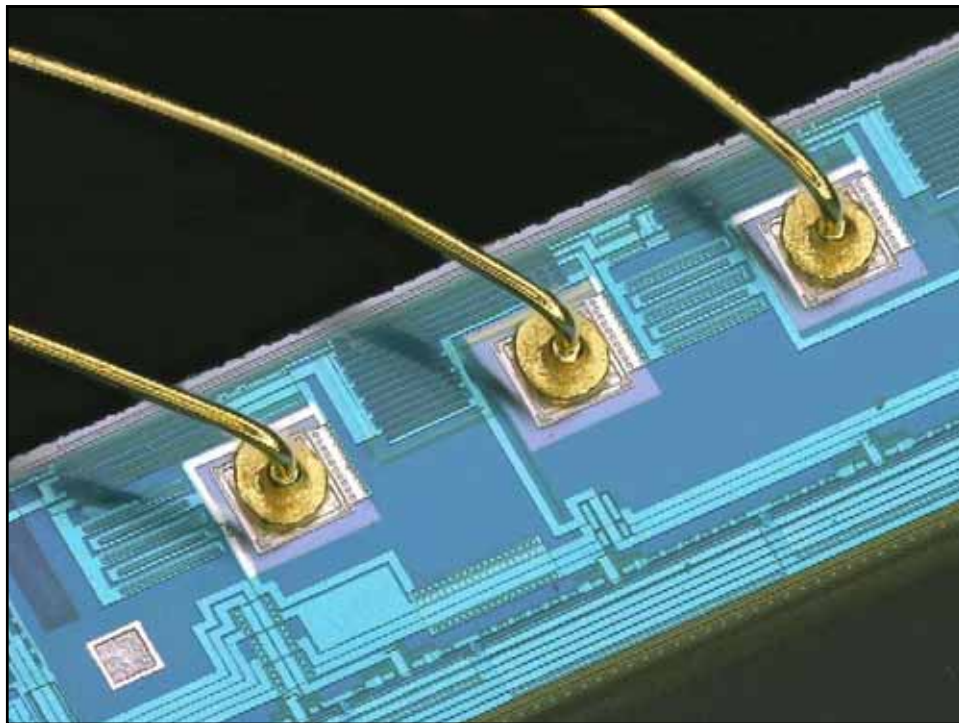
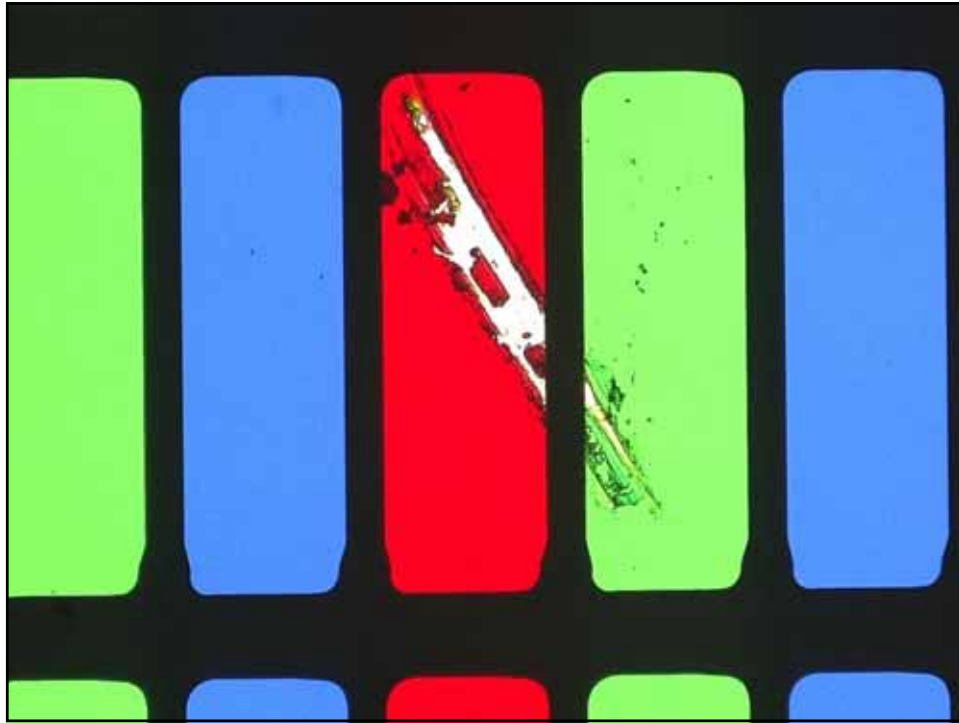


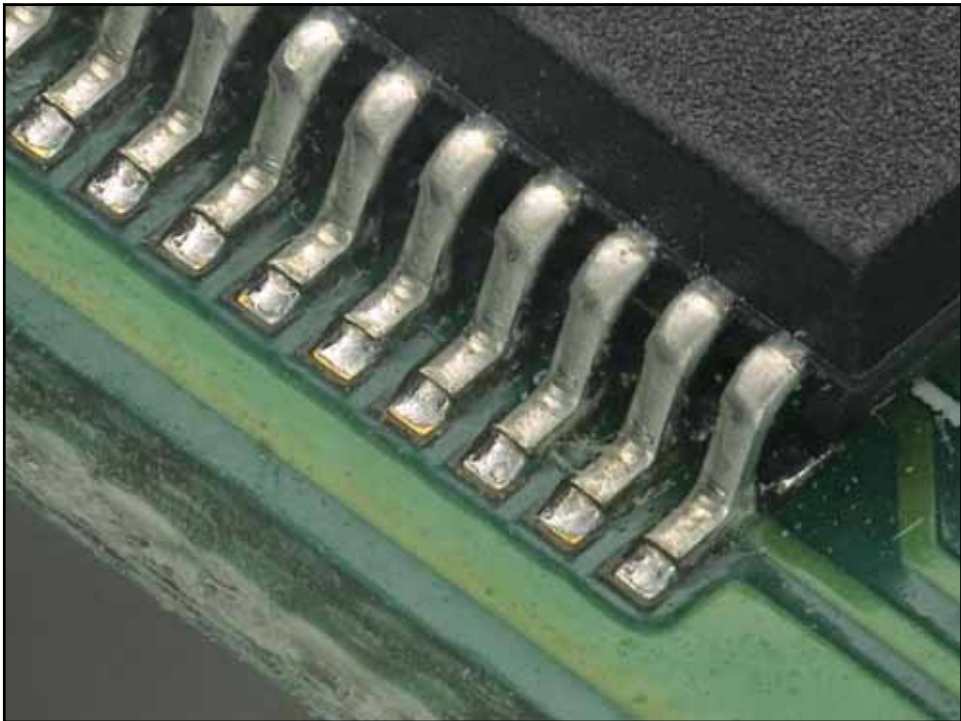
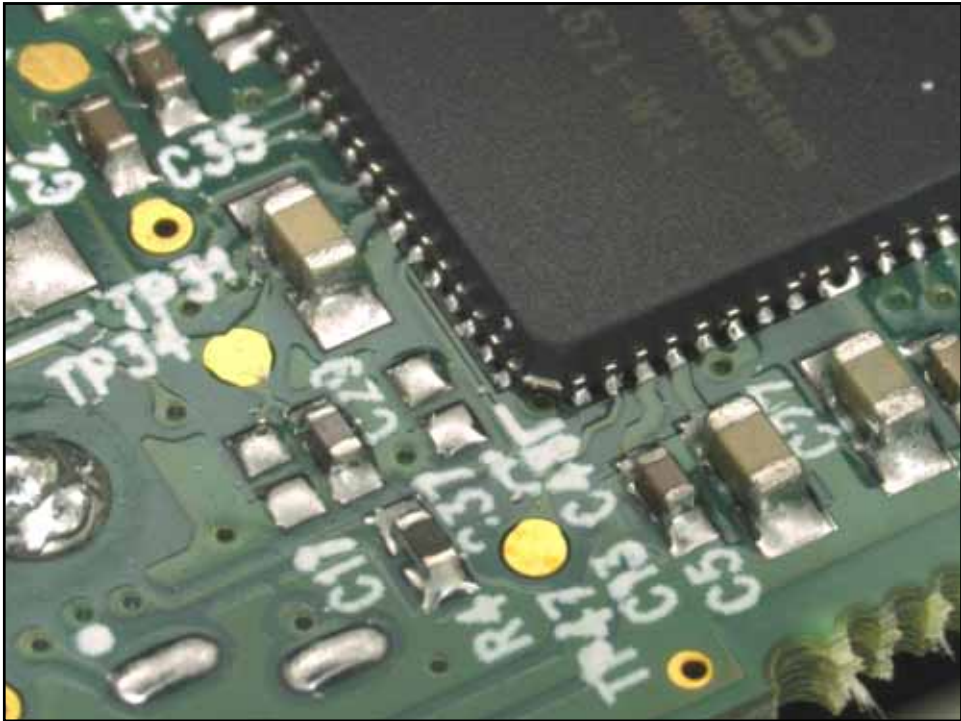
## Sample Applications

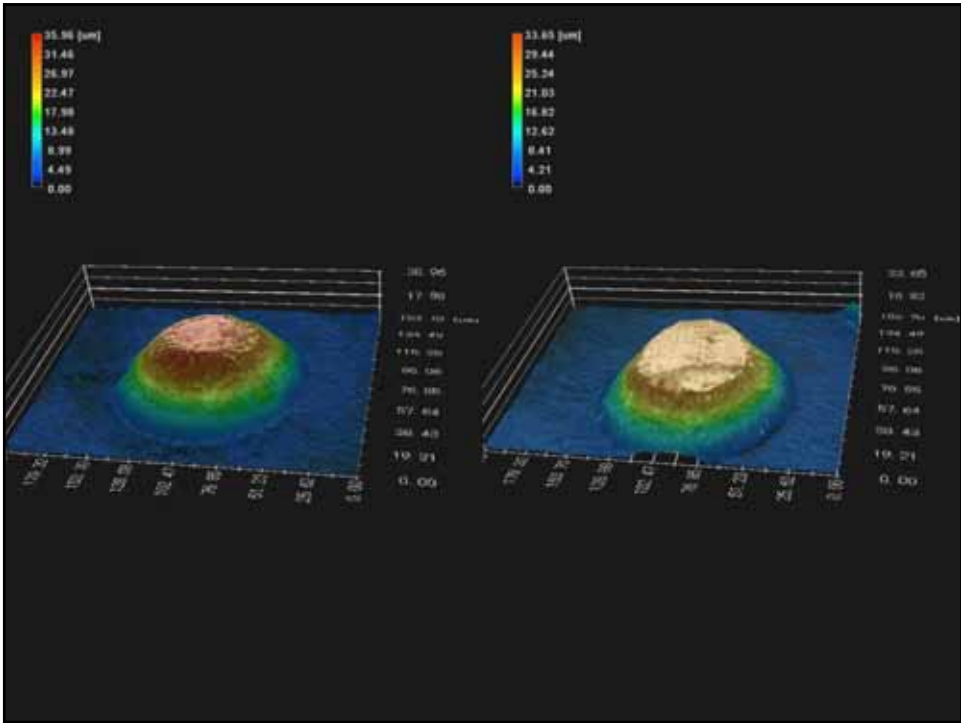


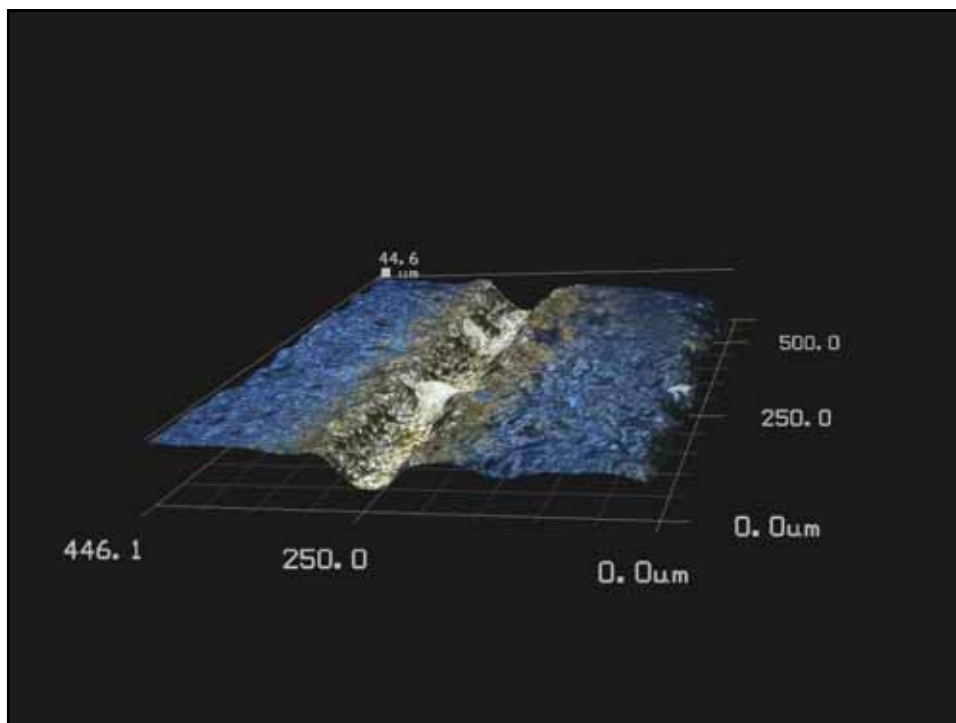
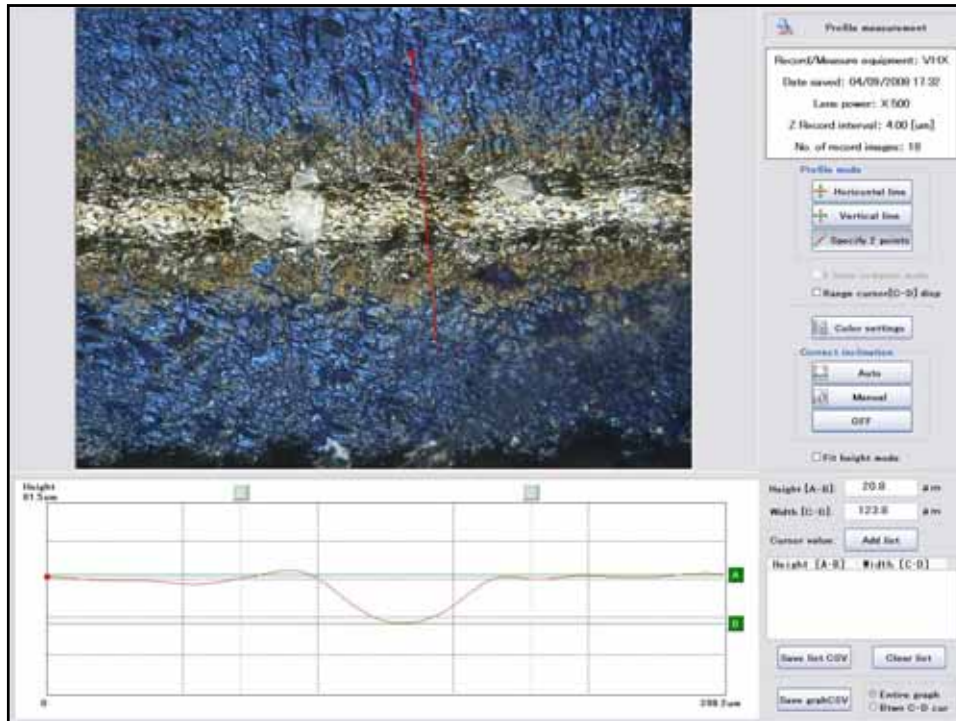




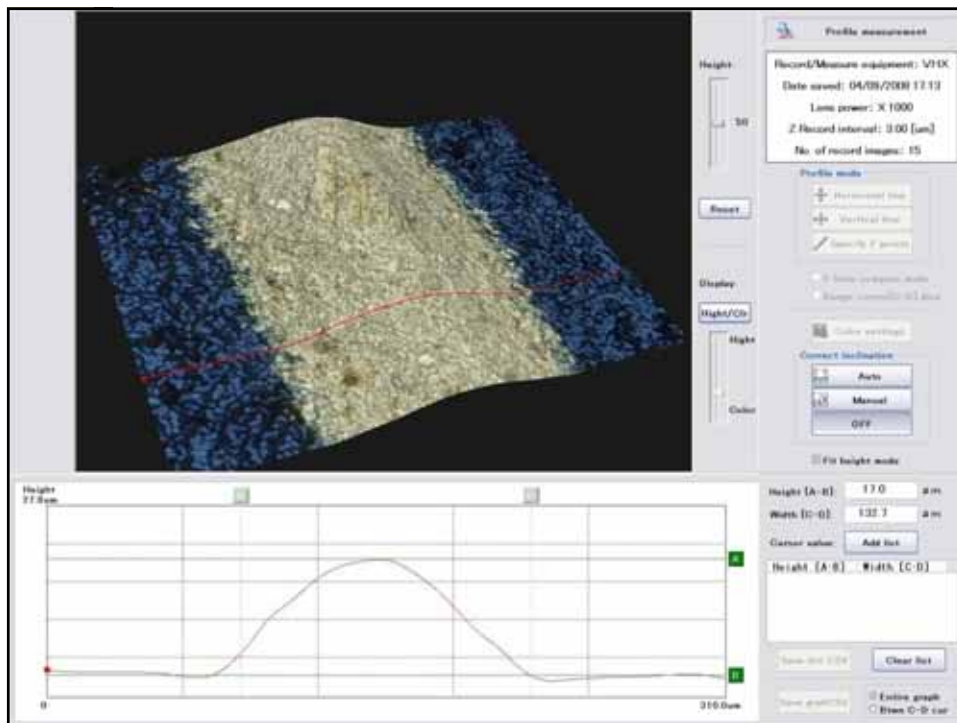
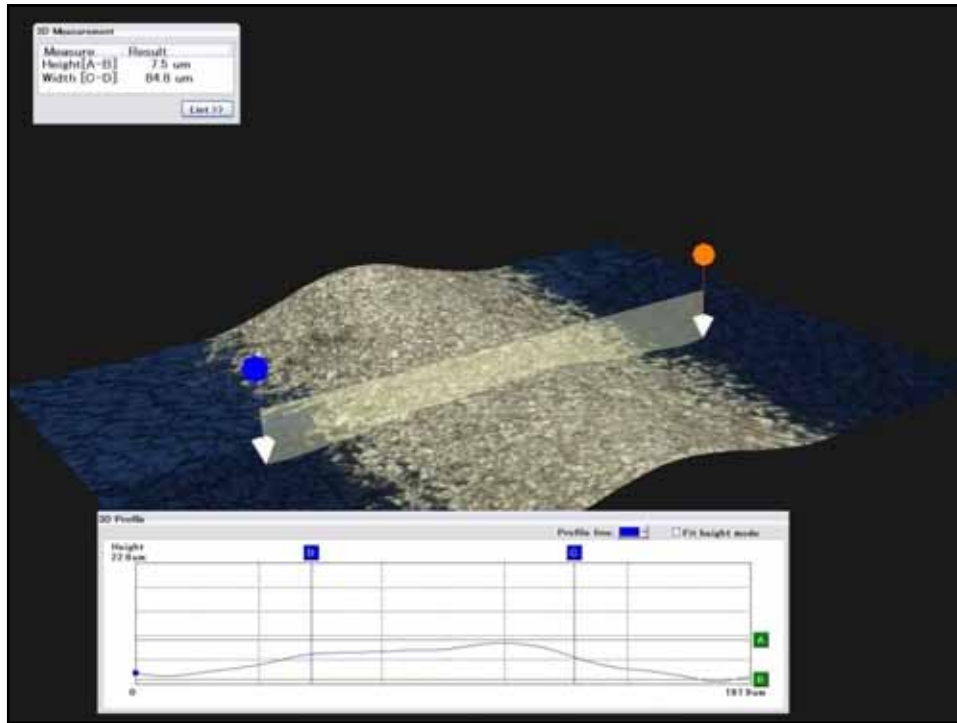


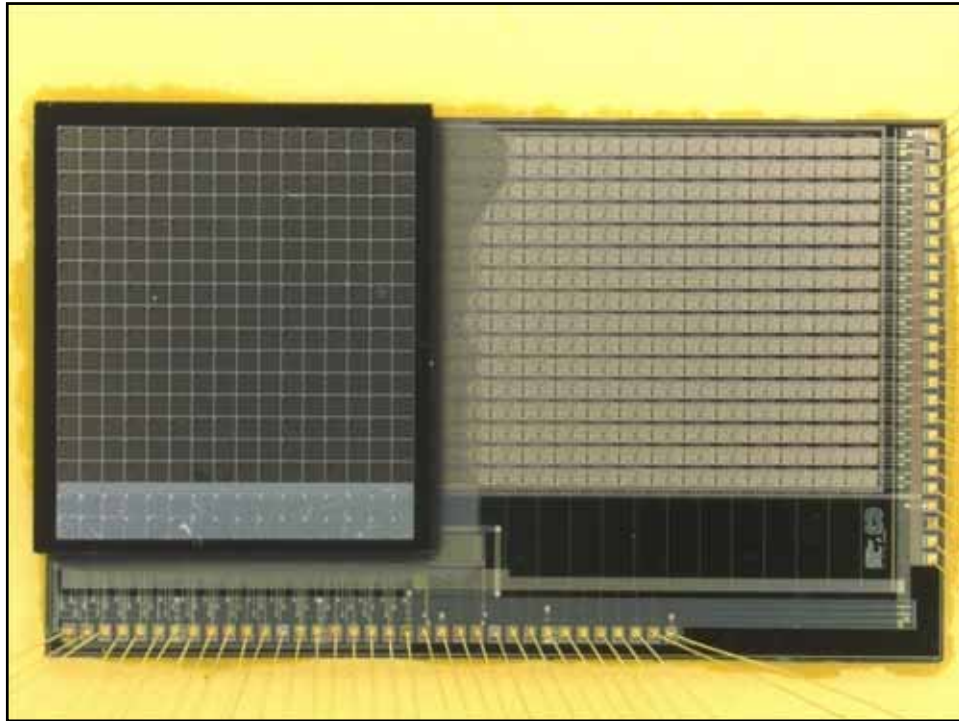














## Further Reading

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- <http://micro.magnet.fsu.edu/primer/digitalimaging/index.html>
- <http://www.diaginc.com/techforum/AdvanMaterIsArticle.pdf>

Thank you,  
Andrew Kominek

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