

# Data Storage Applications

## Zeta-20 3D Metrology Microscope

ZETA

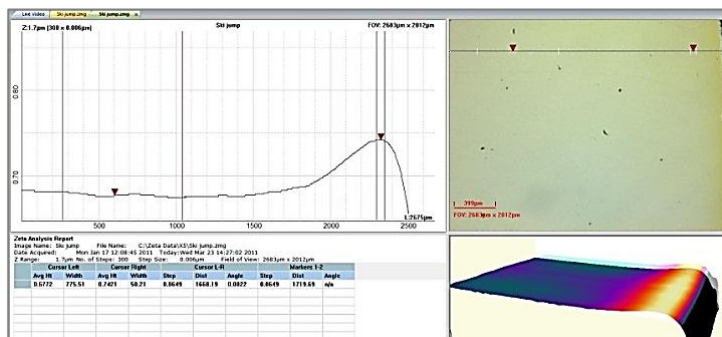
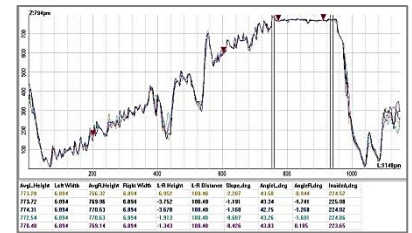
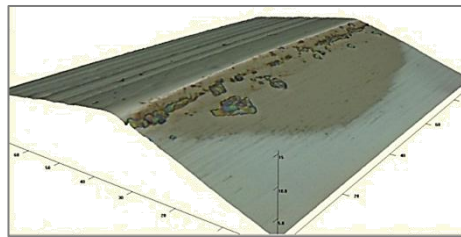


Advanced data storage design imposes extreme requirements on hard disks and other components.

The Zeta-20 3D Imaging and Metrology Microscope measures the parameters that ensure high performance disk drives: edge chamfer width, angle, and roughness; disk rolloff; sidewall defects; lube pickup and step heights on the read/write head; defects and roughness on almost any surface. Measurements are both easy and fast – great for production or failure analysis.

## Disk Edge Characterization

A motorized tilt stage positions the disk edge perfectly to measure the **chamfer width and angle** with respect to the data zone, as well as the roughness of each surface. Sequences enable automated measurements at multiple locations.

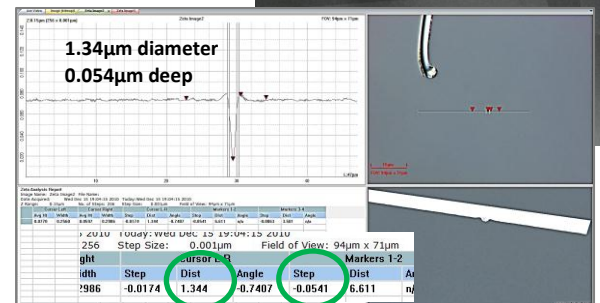
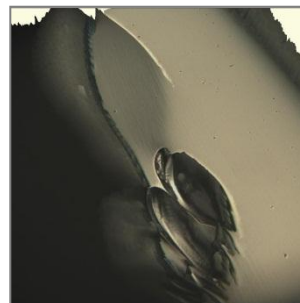


**Disk roll-off** is critically important because current fly heights approach 2 nm and data is written as close to the disk edge as possible. This 6.5-nm "ski jump" is potentially catastrophic.

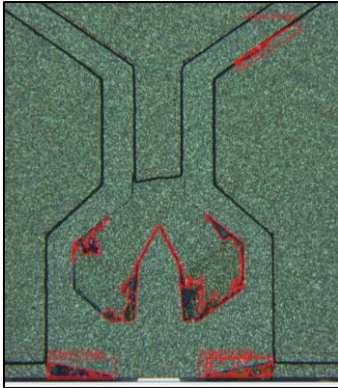
Cursor Left	Cursor Right	Cursor L-R	Markers 1-2						
Avg Ht	Width	Avg Ht	Width	Step	Dist	Angle	Step	Dist	Angle
0.6772	775.51	0.7421	50.21	0.0649	1669.19	0.0022	0.0649	1719.69	n/a

Magnetic Marking can be imaged to find the defect to be scanned

**Failure analysis** of defects on the top surface or the sidewall takes only a minute. The Zeta-20 produces true color images and height analysis on both glass (left) and metal (right) substrates.



# Read/Write Head Characterization



Zeta 3D software detects **lube pickup** and calculates areas based on height or color, turning an inspection that is commonly manual into consistent and quantitative analysis.

The Zeta-20 scans large areas with high Z resolution. **This read/write head has steps of 0.26 µm and 1.72 µm** and a scan area of 1896 x 1422 µm.

## The Zeta-20 Data Storage Package

The Zeta-20 3D Metrology Microscope offers many advantages:

- Customized applications for data storage measurements
  - Chamfer Width, Angle, Roughness
  - Full read-write head 3D profile
  - Lube pickup
- Motorized chucks for common disk sizes
- Submicron resolution over a scan range greater than 1 mm
- Ability to measure very high reflectivity and very low reflectivity surfaces
- Ability to measure very high roughness and very low roughness surfaces (with Nomarski DIC option)
- True color imaging

Zeta 3D Software analyzes 2D or 3D images for general surface characterization:

- Step height
- Surface roughness
- Feature size, diameter, area, and volume
- 3D surface visualization
- Statistics

