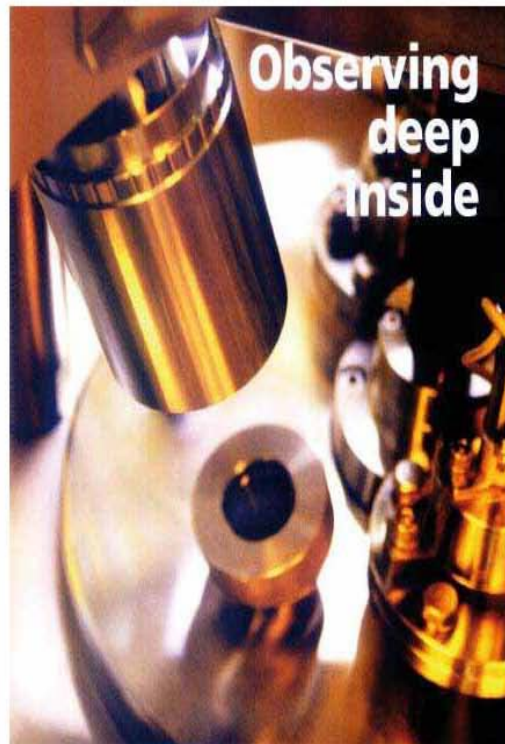




Far-Eye™

**Ultra Long working distance
zoom microscope**



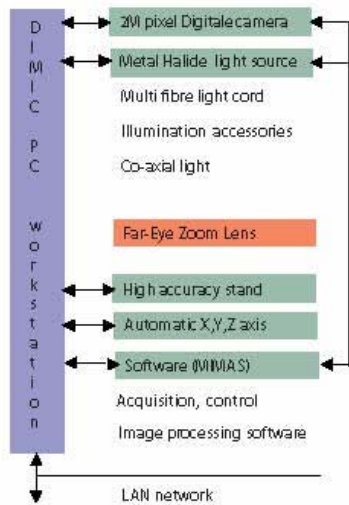
Vision in Technology

Observing deep inside with Far-eye™

Far-eye comprises a Zoom Microscope system with lenses having ultra long working distances allowing distant objects to be inspected with high quality. The long working distance microscope is a high power zoom microscope equipped with a 14x zoom ration, realizing high N.A., high resolution and ultra long working distance operation. The series comes in three types with different working distances (300, 200 and 100 mm).

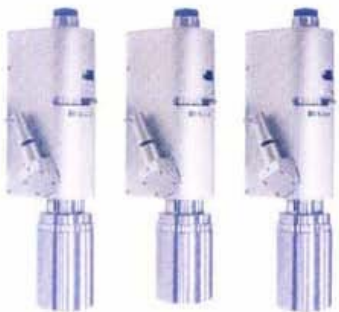
Microscope set-up

A typical configuration of a Far-eye system is depicted in the following diagram.



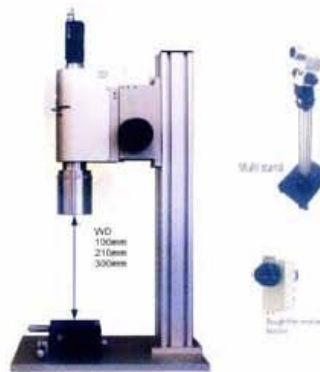
Zoom lens body

The central unit of the system is a zoom lens body equipped with a large diameter objective lens with a 14X zoom ratio, realizing high N.A., high resolution and ultra long working distance. The Zoom lens bodies differ in working distances. The optimum optical system is selected in accordance with observation environment and purpose.



High accuracy Stand

For practical all applications we provide a stand with mounting accessory for the specific Zoom Lens body.



We provide mounting assemblies that permits observation of a sample in test equipments. A tilting stage provides flexibility to position the zoom lens body in any required fixation. The rough / fine motion bracket provides flexibility in positioning the zoom body towards the sample for optimizing the focal distance.

Illumination

Micro-Optik's DIMIC™ system provides a Metal Halide source which can be coupled with a multi fiber cord, guiding light to the coaxial connector of the Zoom body.



#full-scale photograph

Applications

The unique features of the Ultra-long Working distances of the Zoom bodies permit the measurement of samples further away from the lens than in conventional systems. With a configuration one is able to observe phenomena in the inside of a vacuum chamber, allowing to acquire microscopy images in-situ during reaction. As many as 19 lenses are arranged inside the optical system, to combine 14X optical zooming with ultra long working distance without any compromise in image quality. A large diameter objective lens with a maximum lens diameter of 55mm ensures higher N.A and higher resolution.



Diamond synthesis on a silicon substrate by the thermal filament CVD method (900X)



Tip of AFM needle (400X)

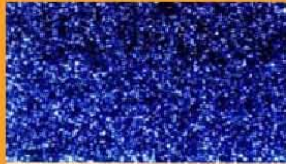
FE300 Ideal for analysis in vacuum chamber

The FE300 Zoom lens has been most frequently used for observations inside vacuum chambers. Real time observations of enlarged images of

crystal and film formation processed are permitted by monitoring through a glass window. The magnification range of the FE300 is 30-420X. The N.A. is 0.067 and the maximum resolution is 5.0 μm . The working distance of almost 300mm operation system ensures a focal depth of 5.5 mm. The FE300 is also very suitable for targeting a AFM (Atomic Force Microscope) in a vacuum chamber



Positioning of FE300 on top of see through glass of vacuum chamber



Multi crystal film of diamond (900X)

Observation of probe alignment



FE300 monitoring in a vacuum vessel

System configuration for observation of AFM cantilever positioning for various samples



FE200 comfortable working distance

The FE200 permits observation with a broad magnification range from 42-588X. The NA is 0.093, the resolution is 3.6 μm and the focal depth is 2.8mm. Among other models the FE200 is well balanced, delivering outstanding performance in many applications. With the flexible stand the FE200 can be placed in all directions. This model is ideal for observation of heat-generating samples, soldering processes and precision micro finished products, as well as for observation of wire bonding conditions when a probe is put on a semiconductor aluminium wiring to conduct a circuit test under a microscope.

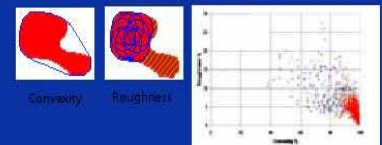
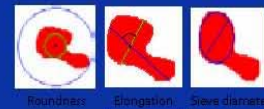
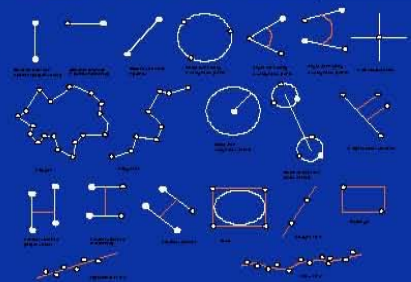
FE100 permits high magnification

The FE100 is ideal for high

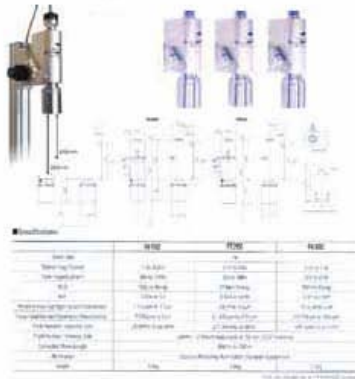
magnification applications where comfort is required through a long working distance. The FE100 allows magnification from 90-1260X. The N.A. is 0.2 and the resolution is 1.7 μm . The FE100 has been used frequently for AFM alignment, bulb filament and submerged samples.

MIMAS software

With a complete system we provide our MIMAS software package. MIMAS is a sophisticated package with many features. MIMAS provides extensive 2D as well as 3D geometrical calculations. For in-situ kinetic experiments we provide real time morphometric routines for particle characterization and statistical visualisation. For non standard applications our software engineers can develop tailored solutions. For the semiconductor industry we have developed software to enhance visualisation of soldering processes.



Far-Eye™ order sheet

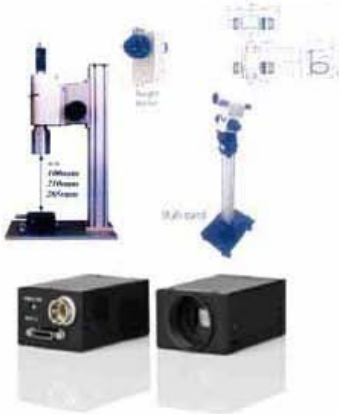


Ultra Long Working Distance Zoom Microscope

- ✓ 200mm or 300 mm Long working Distance Zoom microscope
- ✓ Coaxial reflection illumination as standard
- ✓ FE200: 40 to 600X
- ✓ FE300: 30 to 400X
- ✓ Total magnification on 19" monitor & 1/1.8" CCD camera

Stand

- ✓ Standard manual adjustable stand
- ✓ High accuracy manual adjustable stand
- ✓ Motorized Z adjustable stand
- ✓ Back lighting accessories
- ✓ Manual XY table
- ✓ Motorized XY table



2M pixel CCD camera

- ✓ 1/1.8" progressive scan Bayer mosaic color sensor
- ✓ Frame rate full frame 25 frames/second
- ✓ Active pixels 1624 (h) x 1236 (v) 4.4 μm square pixels
- ✓ C-mount
- ✓ GigE visoin communication protocol



Illumination accessories

- ✓ Metal Halide light source
- ✓ multifiber illumination cords

MIMAS software

- ✓ Mimas data acquisition and control
- ✓ for video analysis, data management
- ✓ for machine vision applications
- ✓ for calibration, geometrical calculations 2D, 3D,
- ✓ topography analysis, filtering, kinetics, FFT, 3D DFD
- ✓ pattern recognition, particle analysis, statistical evaluation routines,

