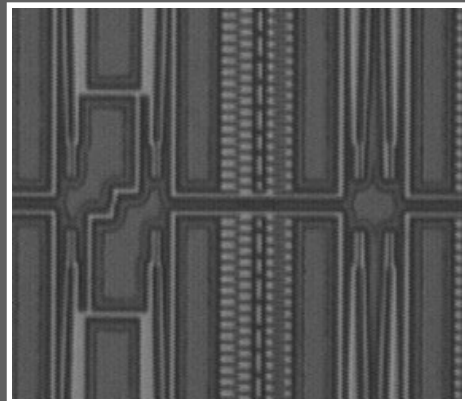


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Product Information Brochure



IR Light Wafer Inspection Microscope

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IR Light Wafer Inspection Microscope

General Information

Silicon is transparent for infrared light. Our IR light wafer inspection microscope illuminates the silicon substrate from the back-side and captures the light that permeates the substrate. Therefore, it becomes possible to inspect phenomena inside the silicon substrate, which are not visible with a conventional microscope.

The microscope is equipped with a long working distance objective. A three step zoom allows the user to choose the right field of view and magnification. An IR sensitive camera displays the image of the inspected device via USB on your computer. The resolution is better than 3 μm with a 5x objective.

Additionally, a top side illumination is available. This allows the use of the microscope in a conventional mode and the inspection of the top side of the wafer.

The IR microscope is equipped with a xy-table, which accommodates 8" or smaller wafers. The table is motor driven and can be controlled with a joystick.



IR wafer inspection microscope equipped with top- and back-side illumination, which enables the inspection of phenomena inside the silicon substrate as well as the usage as a conventional microscope.

Features of the IR microscope:

- Back-side IR illumination
- Top-side illumination
- xy-table for 8" wafers or smaller
- Long working distance objective
- 3 step zoom
- IR-sensitive camera
- Inspection on computer
- Low power consumption



Control of IR and visible illumination intensity: The microscope can be used for Infrared imaging as well as a regular microscope with visual light illumination from the top-side.

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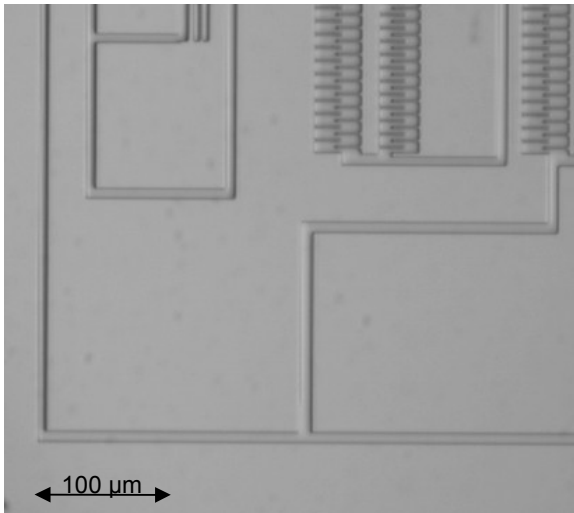
Applications & Benefits

Applications:

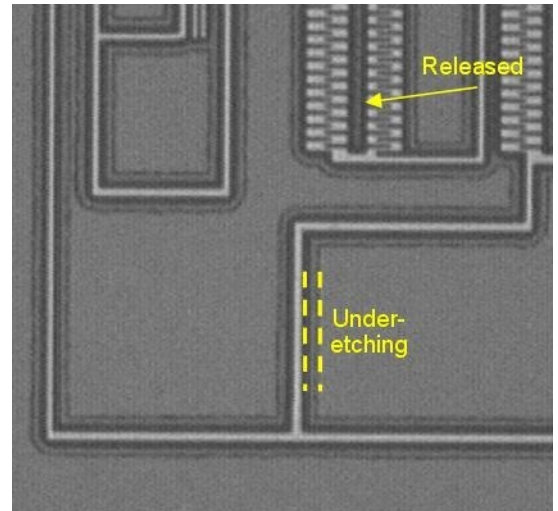
- Inspection of released MEMS devices
- Measurement of etching speed of buried materials (e.g. SOI wafers)
- Inspection of fusion bonding
- Back-side alignment of silicon wafers/chips
- Quality control

Benefits:

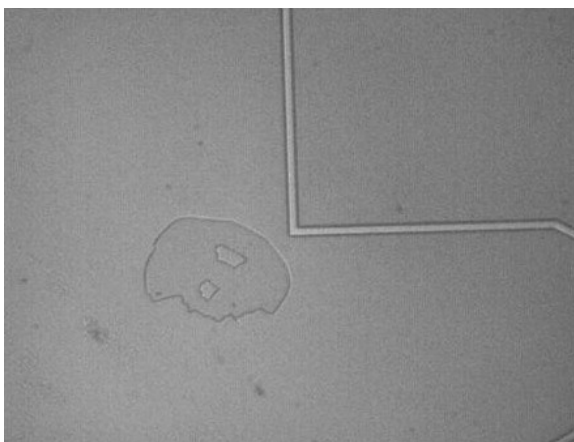
- Reliable fabrication of smaller anchors for MEMS yields higher fill factors
- Top- & back-side illumination
- High resolution ($< 3 \mu\text{m}$ with 5x objective)
- Small footprint
- Easy to use, immediate results



Top view of a part of a microstructure fabricated on a silicon-on-insulator (SOI) wafer.



Infrared image of the same area after 60 minutes of HF vapor phase etching. The under-etching of the buried SiO_2 becomes visible, which enables the determination of released and non released parts.

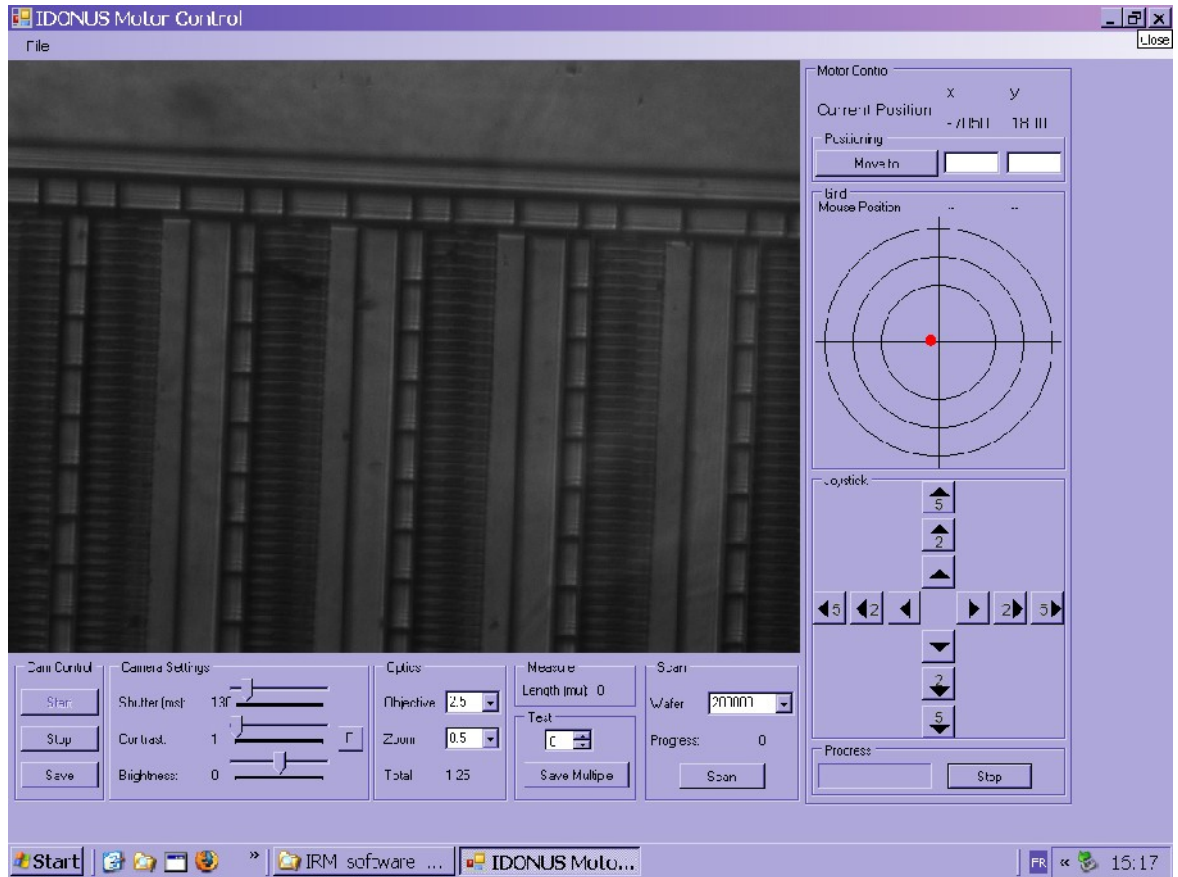


Inspection of silicon fusion bonding: In this case, a DRIE-structured wafer was fusion bonded to another wafer. Any failures such as voids or misalignments can be visualized by IR-light.

IR Light Wafer Inspection Microscope

Graphical User Interface

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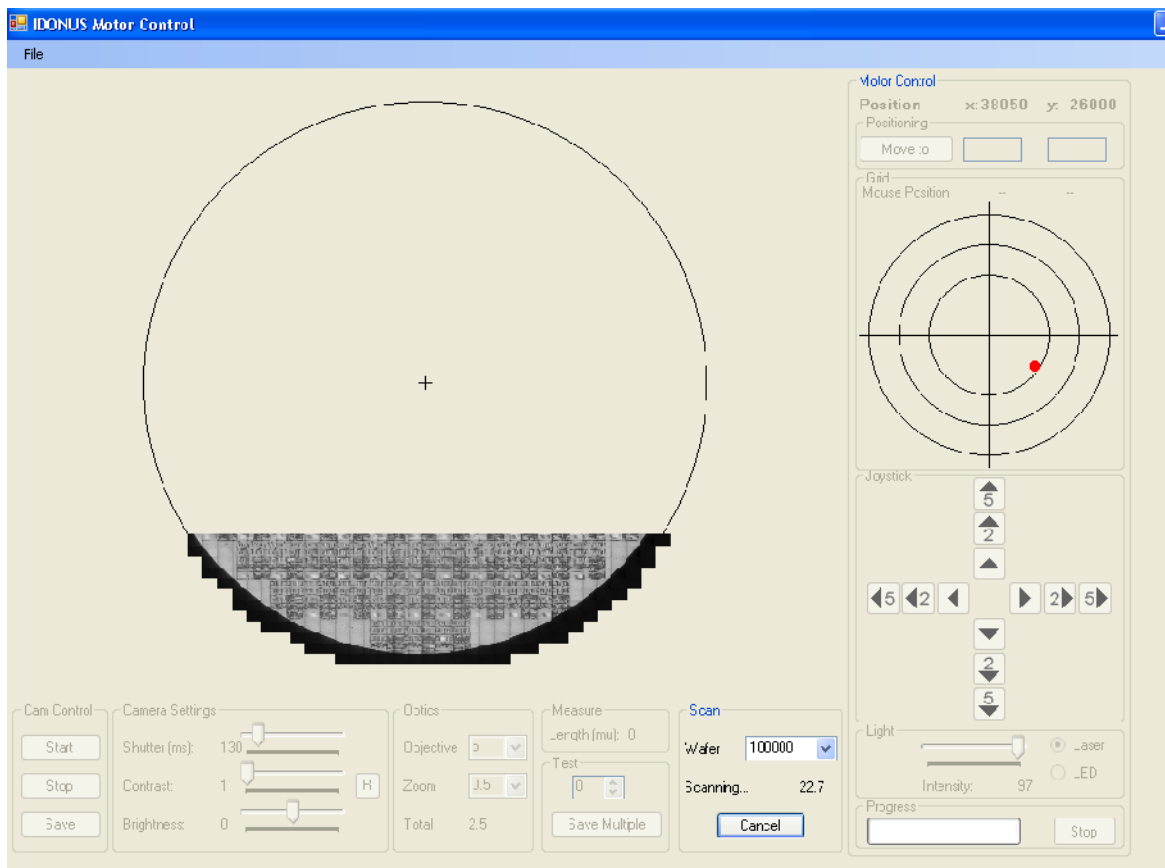


A graphical user interface for Windows allows the user to operate the microscope with a PC. It enables complete control of the microscope as well as an automated acquisition of images on a user defined grid on the wafer.

IR Light Wafer Inspection Microscope

Graphical User Interface

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The high resolution image of a complete wafer can be acquired automatically taking multiple pictures of the wafer. The images are stitched to a large image and stored to your disk drive.

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Technical Specifications

Product Code	IRM200
Wafer sizes xy-table displacement xy-table	200 mm (8"); 100 mm / 150 mm can also be inspected 200 x 200 mm Motor driven, controlled with joystick
Optical resolution Working distance Magnification FOV Zoom	Better then 3 μ m with 5x objective 32 mm 2.5x; 5x; 10x (with 5x objective) 2.5 mm x 2.0 mm (2.5x magnification) 3 step zoom: 0.5x / 1x / 2x
Camera Resolution	B&W with USB 2 output 1.4 Megapixel
IR light source wavelength	1 μ m
Power Power consumption	110 to 230 VAC, 50 to 60 Hz 160 VA
Dimensions (l x w x h) Weight Footprint	700 x 470 x 650 mm ³ 40 kg 700 x 470 mm ²
Software	Driver for Image acquisition Frame grabber
Additional requirements for installation	PC or Laptop with USB 2 interface (Windows XP or 2000)
Optional Objectives Wafer adapter rings Graphical user interface Software for pattern recognition	2.5x / 5x (included) / 10x / 20x For 100 and 150 mm For easy handling and full wafer scan On request available

Note: This IR-Microscope can be used for wafers with a diameter of 100, 150 or 200 mm.

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