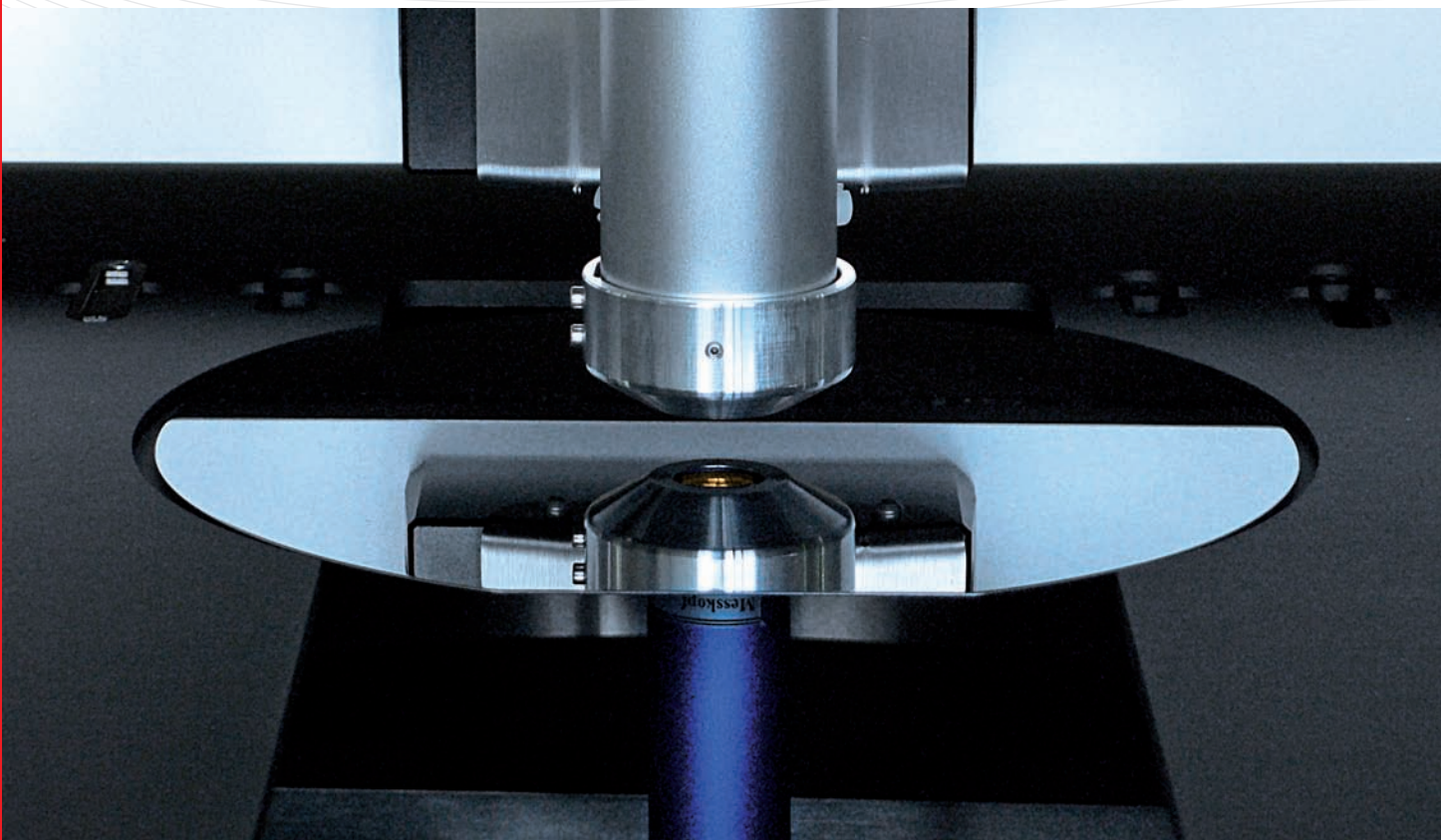


Non-Contact Wafer Metrology

**For Wafer Makers, Reclaim and
Semiconductor Manufacturers**



TTV PITCH ROUGHNESS
TOPOGRAPHY LINE WIDTH
TRENCH PROFILE STEP HEIGHT
FILM THICKNESS BOW WARP

SINCE 1995,
FRT HAS BEEN SERVING THE
INDUSTRY WITH HIGHLY PRECISE
METROLOGY SYSTEMS BOTH
MANUALLY OPERATED AND
FULLY AUTOMATED.

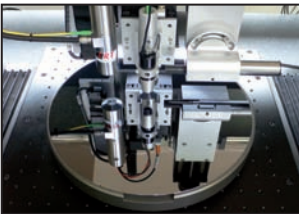
Solutions for Backend

The trend in technology toward ever smaller electronic devices calls for new approaches in wafer manufacturing. Increasingly complex structures on larger substrates demand for more production control and therefore reset the benchmark for modern metrology tools. Besides accuracy and repeatability, versatility or process integration possibilities are today's decisive factors.

Application Versatility

Multisensor technology is the key

We believe that advanced metrology tools need to be flexible, upgradable, and future orientated. This is why we developed the *FRT Multisensor Concept* which allows you to adapt your measuring tool to your needs as applications evolve. Just imagine the advantages of a tool that combines several measuring technologies such as confocal microscopy, chromatic methods and atomic force microscopy in one easy-to-use workflow. Along with over 13 years of metrology experience here at FRT, we can offer solutions for your specific requirements!



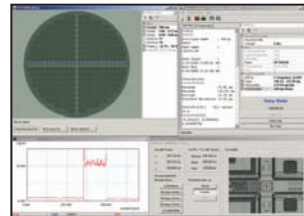
Multisensor setup with AFM.

Productive Efficiency

Handling and measurement automation

Whether you need a standalone non-contact wafer metrology tool for your lab or a fully integrated system for the production floor in frontend or backend – FRT has standard and customized solutions to increase your productive efficiency. The level of automation ranges

from manually operated tools that automatically run predefined recipes up to systems with robotic wafer handling and automated pre and fine alignment.



Automated measurements with highly sophisticated measuring software for frontend and backend.

FRT systems can be configured to handle both SEMI compliant and non compliant wafers which are often used in the MEMS industry. Furthermore, *MFE* metrology systems are capable of processing 200 and 300 mm wafers in one system (FOUP and SMIF cassettes possible). The included SEMI compliant software package allows for interactive or automated use as well as easy recipe creation and integration into existing production control systems via the SECS/GEM interface.

Professional Support

Understanding your needs

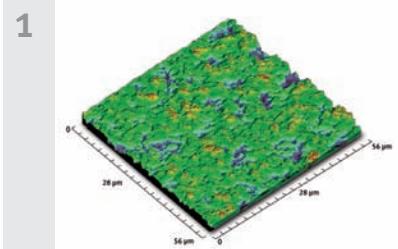
Beside building hard- and software, we believe that a comprehensive solution consists of additional value added services and superior technical support. FRT has a global network of subsidiaries and distributors to provide on-site support and training for more than 300 installed systems around the world.

We recently introduced an exciting new mode of direct technical support. By means of the easy-to-use internet based *FRT Remote Support Software*, our in-house experts cannot only tell but also can show you how to solve your questions, no matter where you are located in the world!

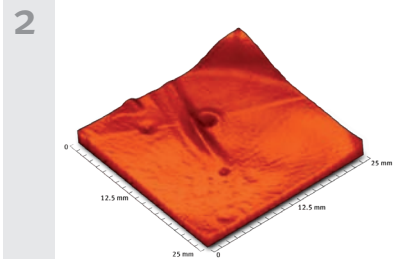


& Frontend

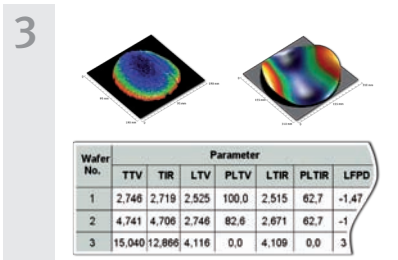
Application examples taken from the process



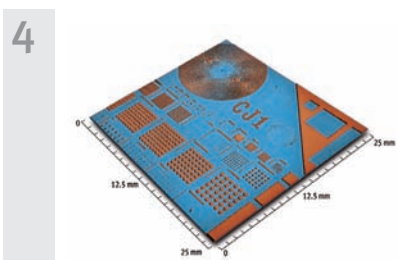
This is a nm-range roughness measurement on a bare wafer. The measurement has been conducted using a high resolution AFM probe in order to determine grinding, etching and polishing quality.



3D film thickness mapping on a 300 mm wafer (Si) after applying SU-8 photoresist. The measurement was made with the chromatic sensor CWL in film thickness mode. This is used to check for even distribution of the film.



Left: 3D measurement of total thickness variation (TTV), right: 3D topography of bent wafer, bottom: SEMI compliant thickness and flatness data of bare and structured wafers after polishing / CMP. The measurements were conducted with two opposing chromatic sensors.

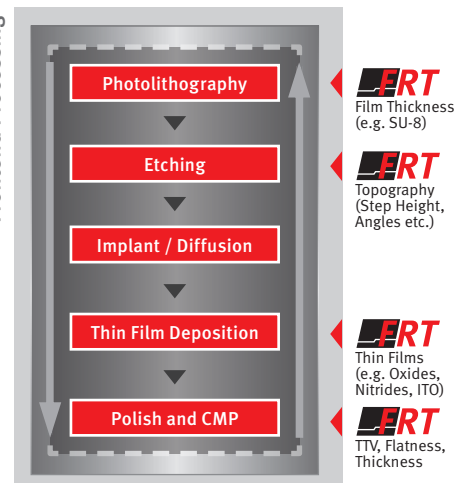


This 3D structure has been created during multiple lithography steps in frontend. It was measured non destructively with our high resolution chromatic sensor.

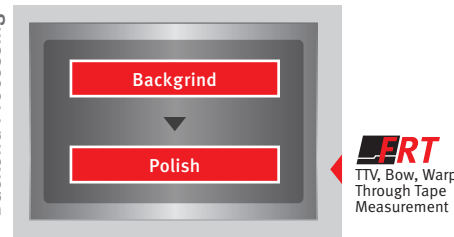
Wafer Maker / Reclaim



Frontend Processing



Backend Processing



Current FRT Customers

ASE **Carl Zeiss** **EPCOS** **Q-Cells** **IBM** **DISCO** **Infineon** **IXYS Semiconductor**
Avago **Lexmark** **Applied Materials** **Sony** **VTI Technologies** **Bosch**
REC Scanwafer **SIEMENS** **Semitoool** **Philips** **Wacker-Schott** **Western Digital**



MicroProf® Multisensor Tool

Multisensor metrology tool for roughness, profile, topography, film thickness and more.

- manual handling
- batch measurements



MicroProf® Multisensor Production Tool

Multisensor metrology tool with protective enclosure for roughness, profile, topography, film thickness, TTV and more.

- protective enclosure
- manual handling
- batch measurements



MicroProf® TTV

Multisensor metrology tool with automatic wafer handling for the measurement of roughness, profile, topography, film thickness, TTV and more.

- fully automated handling
- open cassettes
- SECS/GEM interface
- SEMI compliant



MicroProf® MFE Bridge Tool

Combined 200 and 300 mm wafer metrology tool for front-end use. Its multisensor capability allows the measurement of TTV, profile, roughness, topography, film thickness and more.

- fully automated mini environment (EFEM)
- handles FOUP and/or SMIF
- SECS/GEM interface
- SEMI compliant

Sensor Options: chromatic point sensors, film thickness sensors, white light interferometer, confocal microscope, atomic force microscope

With compliments from your
local FRT distributor.

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