

QS1200™

FTIR Metrology For Wafer Processing

Nanometrics presents the QS-1200 desktop system for dopant monitoring, epi thickness measurement, and other applications. The QS-1200 is designed for advanced semiconductor fabs performing material characterization in silicon growing and device manufacturing areas. It provides a new level of integration of the FTIR technique utilizing proven optical technology, and a manual wafer tray to accommodate SEMI standard wafer sizes of 100, 125, 150, 200, and 300 mm. Odd shaped wafer pieces, and 2 mm thick silicon slices can also be used on the QS-1200. An available option is a single wafer mapping (r, theta) stage for all the above wafer sizes.

Typical Applications

- Epitaxial film thickness
- Film thickness (dielectric, wafer, MEMs)
- Interstitial oxygen and substitutional carbon in silicon
- Boron and phosphorus in BPSG
- Hydrogen in SiN and SiON passivation layer
- Fluorine in FSG layers
- General purpose FTIR analysis
- Contact Nanometrics for detailed list of applications



QS-1200

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nanometrics
Predictive Metrics for the Nano World

System Description

- Non-contact and non-destructive FTIR technique for a large number of applications using Nanometrics' proven FTIR technology and proprietary algorithms
- High sensitivity ensured by large optical aperture, self-aligning interferometer and related optics
- QS-1200 PC system is fully GEM compliant and the SECS interface supports local and remote control operation by the host via HSMS/SECS-1 protocols
- Transmission and reflection measurements
- Unlimited measurement pattern and 2D/3D mapping
- Faster installation and qualification
- Easy recipe transfer

Easy to Use

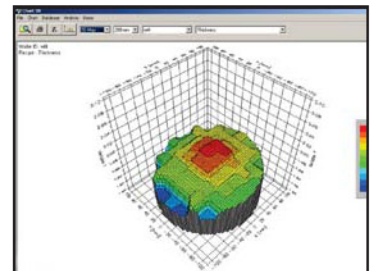
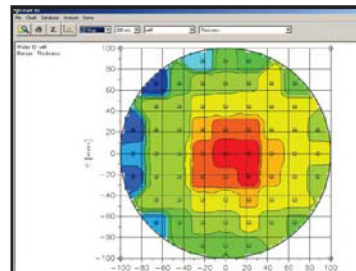
In its basic configuration, the instrument consists of an FTIR-based optical console and a manual wafer tray to accommodate SEMI standard wafers ranging in diameter from 100 to 300 mm, or odd shaped silicon slices. The instrument is controlled by a powerful PC with Microsoft® Windows XP operating system. With the optional single wafer mapping stage, unlimited wafer mapping measurements can be made.

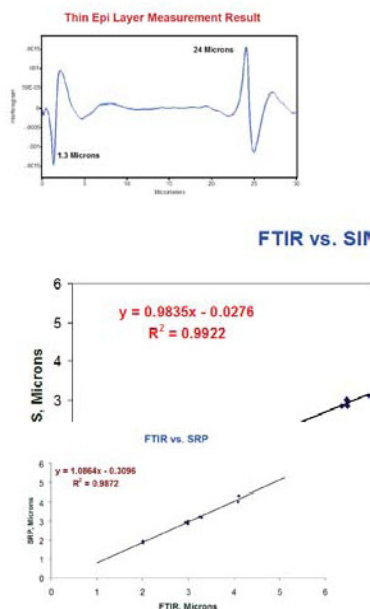
The easy-to-use Nanometrics WIN application software contains routines to create patterns to map and recipes to process the wafers. The measurement results are stored in a Microsoft Access™ database with easy export to other database formats such as Excel™. When the optional mapping stage is used, the measurement results also can be used to generate contour maps to determine the uniformity.

Specifications

System Performance

Uptime	> 98%
MTBF	> 2,000 hours
MTBA	> 1,000 hours
MTTR	< 4 hours





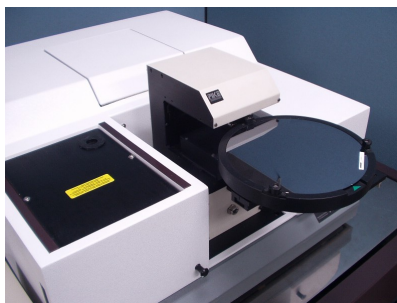
Available applications:

- EPI/MEM EPI/Hetero EPI/Quantum EPI
- BPSG
- CO
- FSG
- HSQ
- FimZ
- SiCN
- SI-N/-OC/-ON
- Oxygen Dose/Precipitate

For more information on specific application or configuration options, please consult your local sales representative.

Available configuration options:

- 200/300mm manual sample holders (incl. 2", 3", 4" 5" and 6" templates)
- 200/300mm auto mapper (incl. 2", 3", 4" 5" and 6" templates)
- purged wafer compartment
- Dual detector options MCT & DTGS
- External beam option



System Measurement

Application		Range	Precision	Accuracy
Epitaxial Thickness	[Si/Si]:	0.1 - 200 μm	<0.01 μm	N/A
Bulk Impurities	[O]:	3 - 40 ppma	0.1 ppma	0.2 ppma
	[Cs]:	0.1 -10 ppma	0.05 ppma	0.1 ppma
Dopant Composition	[B]:	1 -7 Wt%	0.05 Wt%	0.15 Wt%
	[P]:	2 -12 Wt%	0.05 Wt%	0.25 Wt%
	[F]:	1 -10 Wt%	0.05 Wt%	0.15 Wt%
Hydrogen in Passivation Layers	[Si-H]:	3 - 30 Atom%	0.3 Atom%	0.5 Atom%
	[N-H]:	3 - 30 Atom%	0.3 Atom%	0.5 Atom%

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