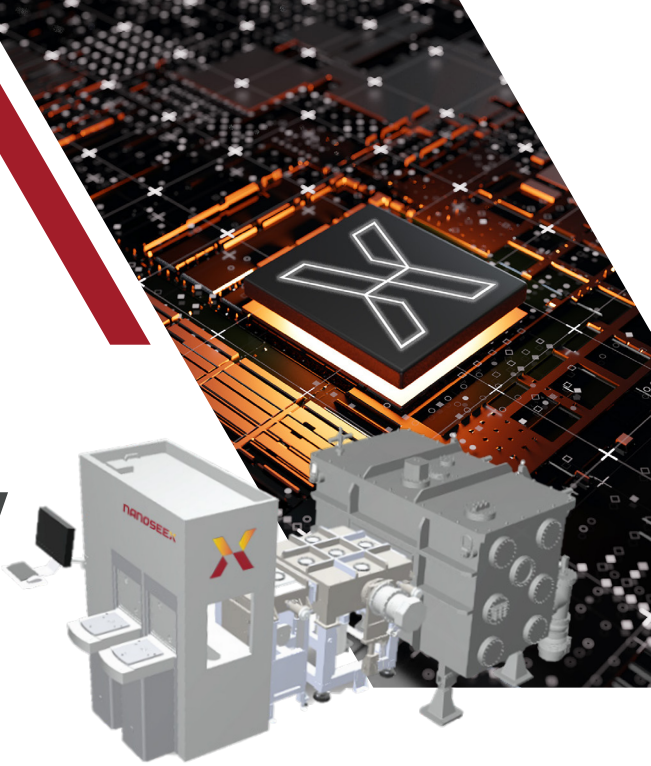
The Guardian
of the Front-End Semiconductor Industry



Redefining Xcellence in Nanotechnology

We are spearheading semiconductor innovation, driving the transformation of chip manufacturing processes. With semiconductor processes progressing towards the 2 nm node and beyond, featuring shrinking transistor sizes and a transition from 2D to 3D structures, as well as the integration of metal or alloy materials, the shortcomings of existing optical measurement methods become increasingly evident. As a result, critical dimensions cannot be precisely measured, directly affecting yield and resulting in unfavorable outcomes.

KEY FEATURES

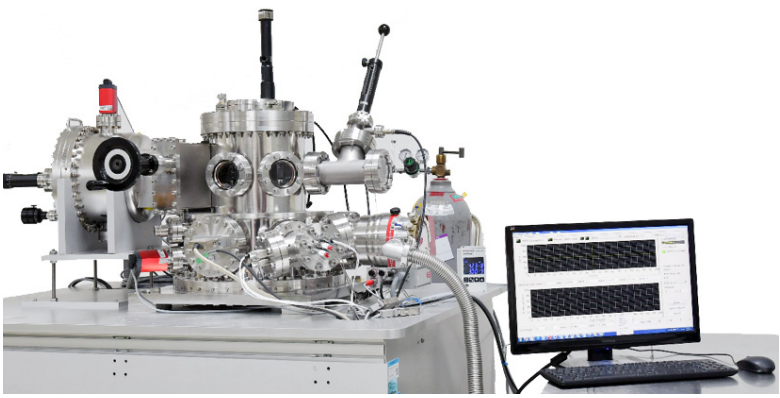
Reflective X-Ray Technology

- Non-Destructive Analysis: Provides precise measurement without damaging samples
- Wide Material Compatibility: Accurately measures a variety of materials, including metal and dielectric thin films
- High Sensitivity: Capable of detecting ultra-thin layers and 3D layers CDs down to nanometer scale

Proprietary Algorithm Highlights

- Advanced Layer Analysis: Robust algorithms tailored for 3D transistors, single-layer and multi-layer thin film characterization
- Exceptional Repeatability: Ensures consistent results with industry-leading precision and accuracy
- Material-Specific Optimization: Algorithms are fine-tuned to adapt to unique material properties, maximizing reliability
- Seamless Integration: Compatible with industry-standard data management systems for streamlined process control

12-inches automized



Laboratory customized

NANOSEEX

PRODUCT FACT SHEET

NanoSeeX Advanced X-Ray Metrology Systems
Innovating Precision Measurement for Semiconductor Manufacturing
X-ray Reflection Critical Dimension Tool (XRCD)

BENEFITS

The NanoSeeX X-Ray metrology systems are designed to provide exceptional precision and accuracy for advanced designed structures measurements, enabling manufacturers to:

- Streamline R&D and production cycle times with accurate characterization and optimization of advanced 3D transistors, photonics, and other advanced structures
- Meet stringent quality and precision requirements for semiconductor and optical device manufacturing
- Gain reliable, actionable data on single-layer and multi-layer thin films for advanced material analysis
- Enhance yield and process control at optimal cost-of-ownership

TECHNOLOGIES

- Reflective X-Ray technology for non-destructive material analysis
- Advanced algorithms for 3D transistors, multi-layer and single-layer thin-film characterization
- High sensitivity and repeatability for sub-nanometer layer thickness & CDs measurements
- Flexible system configurations to meet both automated and semi-automated workflows

APPLICATIONS

- Measurement of advanced logic node devices
- Advanced photonics material characterization and debugging
- Inline monitoring and evaluation of critical sites for process stability
- Process window exploration and qualification for semiconductor production

PLATFORM OPTIONS

- **Measurement System Specifications:**
  - Fully automated with EFEM for seamless wafer handling
  - Semi-automated with manual load-lock operation
  - Coupon, Wafer Sizes: 4-inches, 6-inches, 8-inches, 12-inches
- **Measurement Capability:**
  - Absorptive materials: ≤ 3 μm
  - Non-absorptive materials: ≤ 6 μm
  - Metal layers: ≤ 0.5 μm
  - Micro-Area Measurement
- **Performance:**
  - Precision: ≤ 0.1 nm for both film thickness & CDs
  - Accuracy: ≤ 0.2 nm for film thickness, ≤ 1 nm for CDs
- **Customizable Configuration System**

MARKET

Semiconductor manufacturing and photonics industries, focusing on advanced design nodes (including EUV Mask & Pellicles) and optical devices.

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