

ASET-F5x Pro

Optical Thin Film Measurement System

ASET-F5x Pro: The industry standard and proven work horse for film thickness measurements.

The ASET-F5X Pro film metrology system provides reliable, affordable and high precision thin film measurements of film thickness, refractive index, and bow/stress capability across a broad range of film stacks and geometries. The system features capabilities that provide absolute accuracy, reproducibility and system-to-system matching required for fabs that manufacture devices for the IOT, automotive and mobile markets. The ASET-F5x Pro integrates precise optical spectroscopic ellipsometry and reflectometry metrology technologies in a single system to manage the full range of thin film measurement challenges required by μ LED, MEMs and IC manufactures.

- High sensitivity, continuous wavelength spectra for SE/SR film thickness metrology for single layer and multi-layer film stacks
- Transparent substrate support for SiC, GaN, Quartz, Glass, GaAs and other clear wafers
- Wafer bow and stress measurement capability
- High throughput enabled for cost-effective process monitoring during high volume manufacturing
- World class applications engineering team available for customer specific film model development, recipe setup and system training

Proprietary Pattern Recognition System

Enables fast, highly reliable measurements due to a unique optics design and state of the art pattern recognition hardware/software. Automatic model selection feature enhances performance by eliminating operator subjectivity.

Fleet Management Service

Precision calibration process reduces the time needed to maintain system to system matching, improving overall fleet performance and availability.

Offline Spectral Analysis (OLSA) Software 2.5

Optional software package enables offline development and optimization of film dispersion models without interrupting the



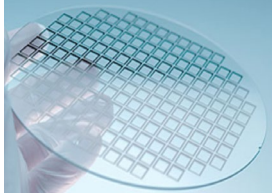
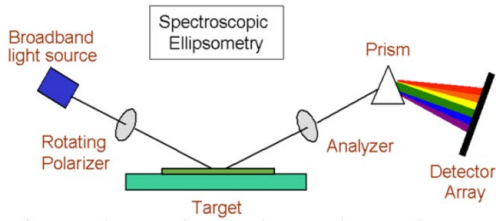
system in production. In addition, OLSA offers advanced development algorithms, models for offline recipe creation, advanced measurement simulation and batch processing with statistics.

Transparent wafer handling

Optional wafer loading and alignment feature supports SiC, GaN, Quartz and other clear type substrates, and the measurement of films and stacks on these various substrate types.

Wafer handling

Accommodates 100/150/200/300mm diameter substrates (handler dependent) as well as substrates up to 1200um in thickness with optional configuration.



Transparent wafer capability



Film stress capability

Spectroscopic Ellipsometry (SE)

Powerful, robust optical technology provides high signal amplitude and phase change information across a continuous wavelength spectrum from 240nm to 780nm. SE is the only technology that measures thickness and refractive index (RI) independently and simultaneously – without referencing or extrapolating – on single-layer films and complex multi-layer thin film stacks. In addition, because SE measures film properties as a function of wavelength (rather than angle), it offers the sensitivity to measure the optical properties of many next-generation film stacks.

Broadband Dual-Beam Spectroscopy (DBS)

Versatile spectroscopic reflectometry (SR) technology uses a spectrophotometer detector to measure thin film properties (thickness and RI) by comparing a reflected light spectrum characteristic of the film stack measured to a theoretical spectrum derived from a reflectivity spectrum and the known characteristics of the film stack.

Single-Wavelength Ellipsometry (SWE)

Optional feature combines unique self-compensating technology

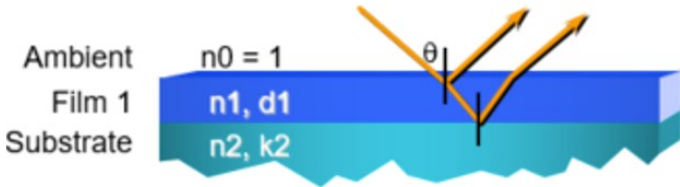
to provide the accuracy, system-to-system matching and reliability needed to precisely measure ultra-thin gate dielectric films used in sub 100nm device technology.

AccuFilm™ (SWE + iDesorber)

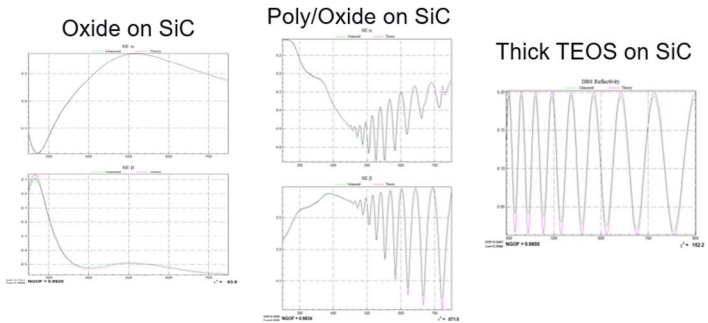
Feature measures true and accurate ultra-thin gate dielectric thickness. AccuFilm combines the capability to eliminate the effects of airborne molecular contamination (AMC) on ultra-thin-film measurement with the self-calibrating, highly stable and matched SWE measurement sub-system.

Film Stress Capability

Optional bow and stress measurement feature for monitor and production wafers adds functionality and capability to the ASET-F5x Pro platform. Wafer Bow Wafer Stress is determined using the measured film thickness or a thickness entered at run time for opaque and transparent films. The combination of film and stress metrology on the same tool improves the overall CoO by reducing footprint and eliminating the need and cost of two separate metrology systems.



Broadband Dual-Beam Spectroscopy (DBS)



Example film measurement use cases



Productivity



Analysis

KLA SUPPORT

Maintaining system productivity is an integral part of KLA's yield optimization solution. Efforts in this area include system maintenance, global supply chain management, cost reduction and obsolescence mitigation, system relocation, performance and productivity enhancements, and certified tool resale.

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