The Leader in Thin Film Metrology

k-Space Associates, Inc. is a leading manufacturer of in situ, in-line, and ex situ metrology tools for the semi- conductor, thin-film, and photovoltaic (PV) industries. Our tools are used for monitoring nearly all thin-film deposition processes, including MBE, MOCVD, PLD, PVD, sputtering, and evaporation, for both research and full production monitoring.

Our product line utilizes patented optical imaging technology for determining thin-film stress, wafer curvature, deposition rate, layer thickness, semiconductor wafer temperature, and RHEED surface information. k-Space products feature advanced process control with particular focus on real- time data acquisition, processing, and analysis.

What do you want to measure?	kSA Solution
Wafer and Film Temperature	kSA BandiT, kSA BandiT PV, kSA ICE
Thin-film Stress and Strain	kSA MOS, kSA ICE, kSA MOS Ultra/ThermalScan
Wafer Curvature, Bow, and Tilt	kSA MOS, kSA ICE, kSA MOS Ultra/ThermalScan
Surface Roughness and Quality	kSA 400, kSA BandiT, kSA BandiT PV, kSA ICE
Film Thickness and Deposition Rate	kSA 400, kSA BandiT, kSA MOS, kSA ICE, kSA SpectR
RHEED Analysis	kSA 400. kSA RHEEDSim
Wafer Carrier Characterization	kSA Emissometer

Putting Light to Work Since 1992

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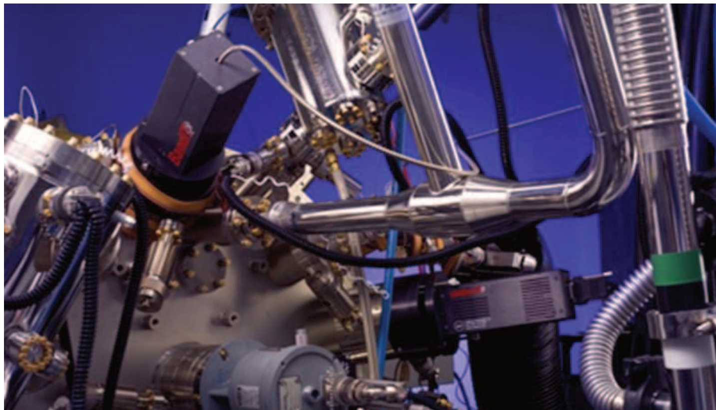
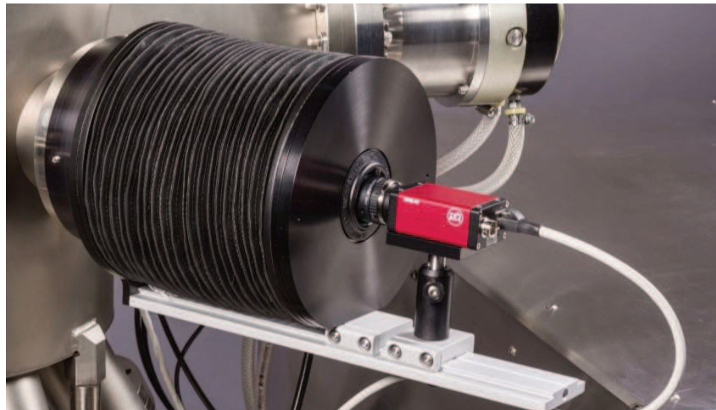


kSA BandiT

Wafer Temperature

The kSA BandiT is a non-contact, non-invasive, real-time wafer temperature sensor, utilizing the temperature dependent optical absorption edge of semiconductor materials. Low temperature monitoring is a specialty of kSA BandiT, with proven performance for GaAs, GaN, InP, SiC and Si.



kSA 400

Analytical RHEED

The kSA 400 is the industry's most powerful analytical Reflection High-Energy Electron Diffraction (RHEED) system available, providing the most information from RHEED patterns.

NEW: kSA RHEEDSim simulation software.
kSA RHEEDSim is powerful, easy-to-use simulation software that gives you complete control over the parameters that shape your RHEED patterns. Available as standalone software or integrated with kSA 400.

kSA MOS UltraScan & ThermalScan

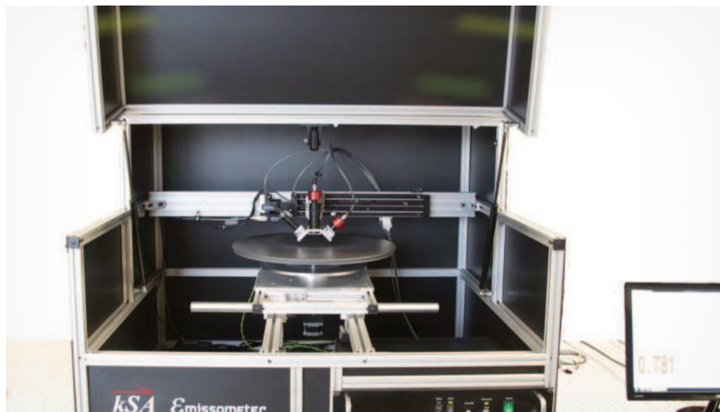
Stress, Thickness, & Reflectivity Mapping

The kSA MOS UltraScan and ThermalScan are flexible, high-resolution scanning curvature, stress, thickness and reflectivity measurement systems tailored for semiconductor wafers, optical mirrors, lenses, or other polished surfaces. Fully integrated vacuum heating systems available from RT-1000 °C.

kSA MOS

In Situ Thin Film Stress

The kSA MOS is a thin film stress, wafer curvature and growth rate measurement tool with integrated, real- time feedback for process control. Its patented design is proven for heteroexpitaxial thin-film growth and is compatible with single and multi-wafer MOCVD, MBE, and sputtering environments.



kSA Emissometer

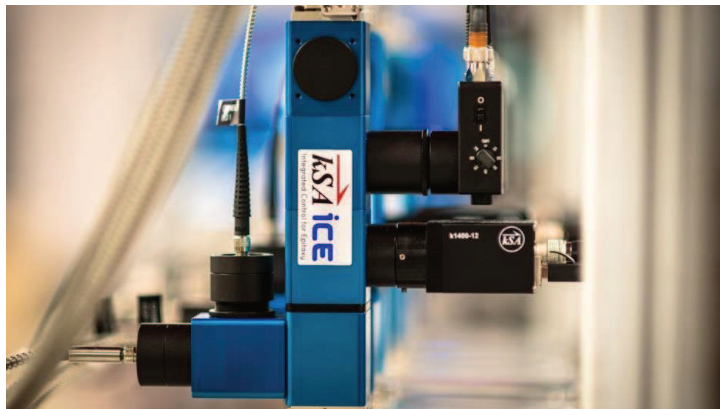
Carrier Reflectance and Emissivity Maps

The kSA Emissometer is designed to quickly and easily generate high resolution carrier maps of both diffuse and specular reflectance as well as emissivity. Use to detect defects and non-uniformities, determine carrier end-of-life, and quantitative temperature set-point correction, due to change in carrier emissivity.

kSA ACE

Atomic Flux Control for Epitaxy

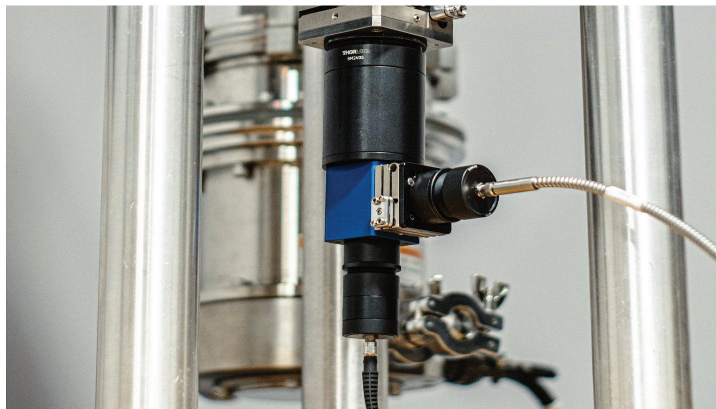
kSA ACE provides atomic flux control with accurate and high-resolution source flux and growth rate monitoring for thin-film deposition. kSA ACE has applications in the fabrication of III-V and II-VI compounds, semiconductor devices, thin-film sensors, solar cells, optical coatings, x-ray optics, flat-panel displays, and more.



kSA ICE

Modular *In Situ* Metrology

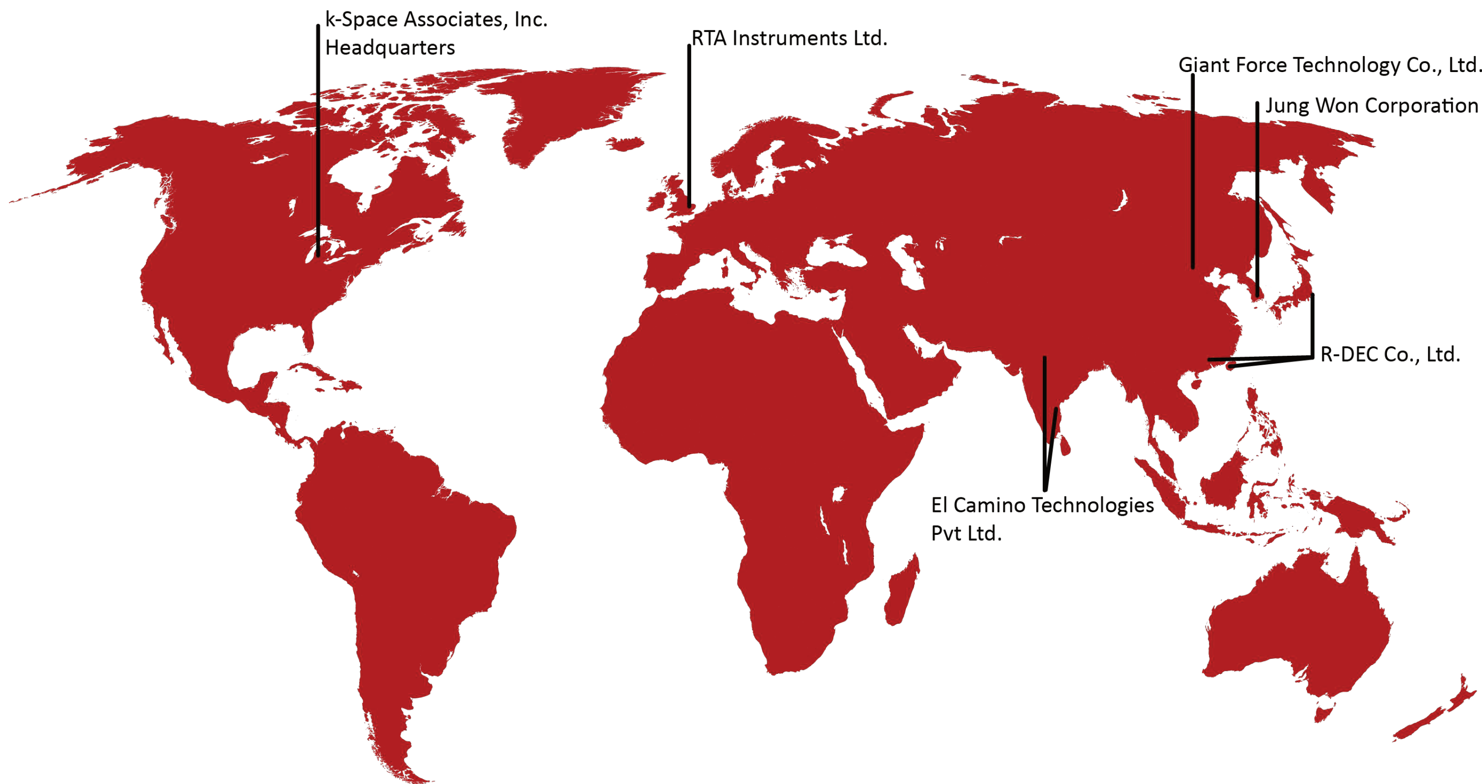
The kSA ICE system is a modular multi-measurement tool. It can combine kSA MOS, kSA BandiT, and kSA RateRat patented technologies along with an Emissivity Corrected Pyrometry (ECP) module to measure film parameters during the growth process, including reflectivity, growth rate, optical constants, curvature, stress, temperature, and roughness.



kSA SpectR

Absolute Spectral Reflectance

kSA SpectR is a complete metrology solution for measurement of absolute spectral reflectance, growth rate and end point detection. Custom spectral features such as reflectance minima, maxima, inflection points, or baseline scatter level, over a user defined wavelength range of interest, are easily measured. Used for monitoring thin-film deposition and processing.



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About k-Space

k-Space Associates, Inc., is a leading metrology supplier to the semiconductor, surface science, and thin-film technology industries. Since 1992, we've delivered the most advanced thin-film characterization tools and software, thanks to close collaboration with our worldwide customer base.

We realize the best products are developed with our customers' input, so we're good listeners. For your real-time surface analysis, curvature/stress, temperature, deposition rate, or custom project, we look forward to helping you with your thin-film characterization needs.

Specifications are subject to change without notice. While due caution has been exercised in the production of this document, possible errors and omissions may occur.

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