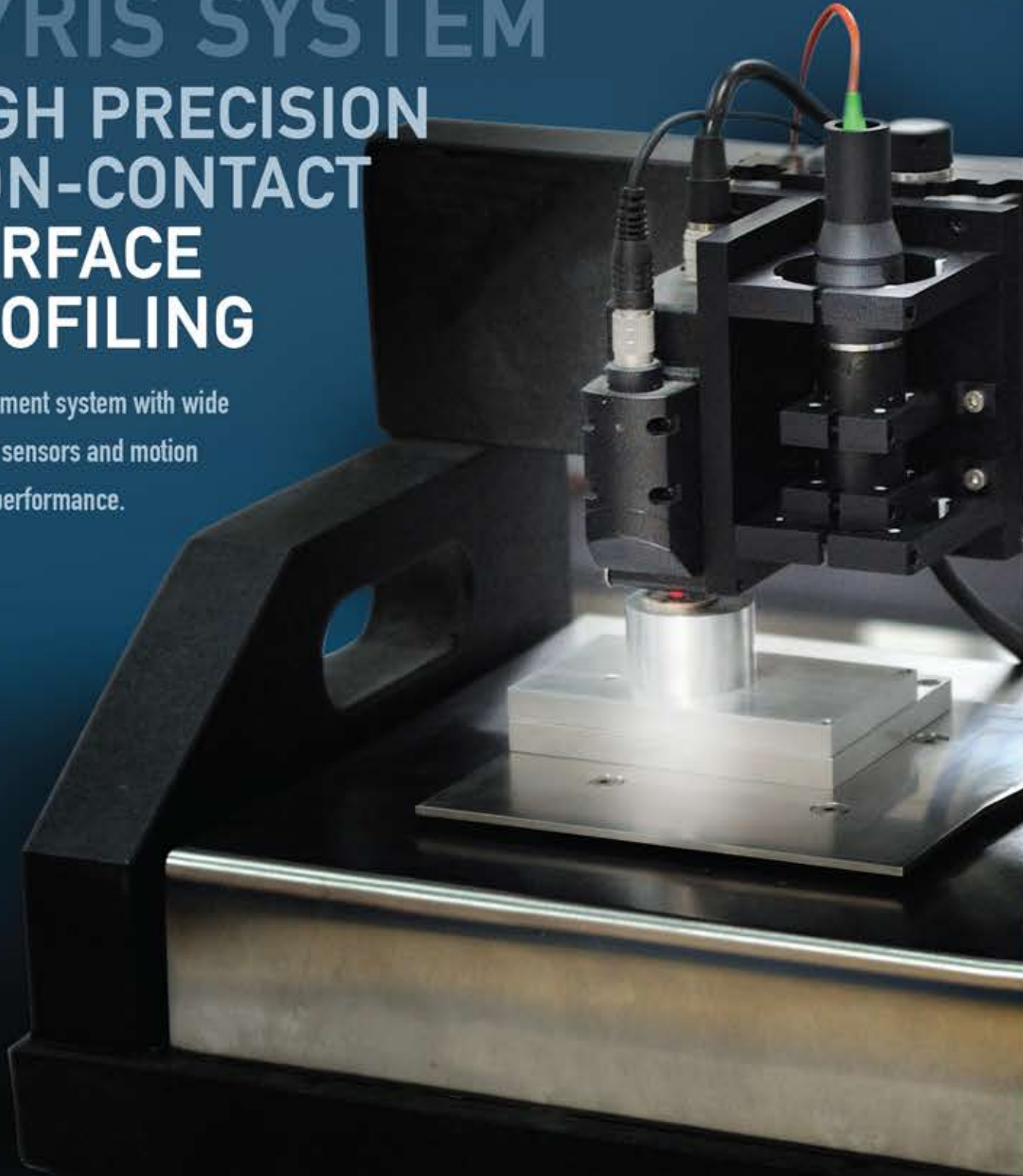


XYRIS SYSTEM HIGH PRECISION NON-CONTACT SURFACE PROFILING

Measurement system with wide
range of sensors and motion
system performance.



Product information also available on www.taicaan.com

TAICAAN TECHNOLOGIES SPECIALISE IN THE DEVELOPMENT AND MANUFACTURE OF SOLUTIONS FOR ULTRA-HIGH PRECISION SURFACE MEASUREMENT AND ANALYSIS. FOUNDED IN 2001, OUR FLAGSHIP SERIES OF XYRIS THREE-DIMENSIONAL (3D) MEASUREMENT SYSTEMS ARE AVAILABLE AS READY-OUT-OF-BOX SUITES, OR SOLUTIONS FULLY TAILORED TO YOUR CUSTOM REQUIREMENTS.

Key features of the XYris series include: ease of use, ultra-high precision, rapid acquisition and performance on many surface types.

XYris systems combine the benefits of an instrument for the measurement of the intricate detail of surface form and texture, while retaining capability for large scale, high precision coordinate measurement in a single convenient package.

An important feature of the XYris systems is the measurement region is defined by the user, not the system optics. The XYris series provide the same high resolution of surface height over the entire measurement region, if this is a few micrometres or hundreds of millimetres.

XYris systems use confocal sensors which have their own internal light source (Laser or White light), and are able to measure all types of materials and surfaces; polymers, metals, ceramics, films, diffuse (rough), specular (reflective), and transparent.

TaiCaan work closely with all our customers to ensure you get the solution you require. Our standard software suite provides tools to program your own automated measurement sequences, enabling you to perform repeat or automated measurements and analysis at the touch of a button. In some cases your measurement or analysis needs may be unique, requiring the development of a bespoke system. Fully customised and automated systems can be developed for your precise needs, saving you time and money.

ADDITIONAL SPECIFICATIONS

A wide range of motion stages are available that allow the user to design the system for their own application. Consult us for your design requirements.



XYris Rotary Surface Profiler

XYRIS SYSTEM SERIES

3D (Three Dimensional) Measurement System

SOFTWARE

XYRIS 2000 TL (TRIANGULAR LASER) SYSTEM EXAMPLE

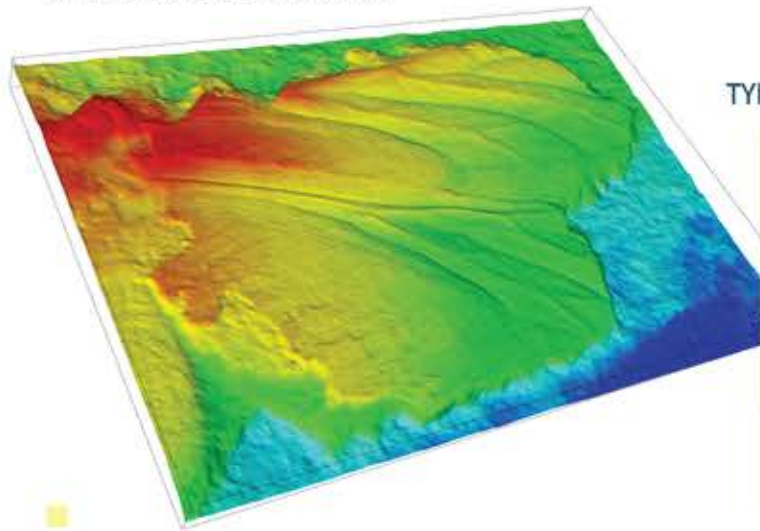
The XYRIS 2000 TL is a versatile machine, integrating size and speed in one convenient package. It is a medium level system and can be manufactured to a variety of specifications encompassing a range of sensor and motion system options. Systems are typically up to 200mm x 300mm scanning areas but larger variants are available on request. The triangulation laser offers high speed scanning at low cost. The XYRIS 2000 can also be supplied with the WL and CL sensors (see sensors section).

MOTION STAGE SPECIFICATIONS

TRAVEL	: 50 - 600mm
RESOLUTION	: 0.1 - 1.25 μm
FEEDBACK	: Linear / rotary encoder
ON AXIS ACCURACY	: 1 - 10 μm
MAX SPEED	: 25 - 200mm/s

TYPICAL TL SENSOR (TWIN DETECTORS) SPECIFICATIONS

TRIANGULATION LASER	SPOT SIZE	MEASUREMENT RANGE
785nm (red) 685nm Optional	30/70 μm	2.5 - 20.0 mm
STAND OFF DISTANCE	RESOLUTION	SAMPLING RATE
15 / 30mm	0.25 - 2.0 μm	100 kHz



XYRIS 4000 CL (OR WL) SYSTEM EXAMPLE

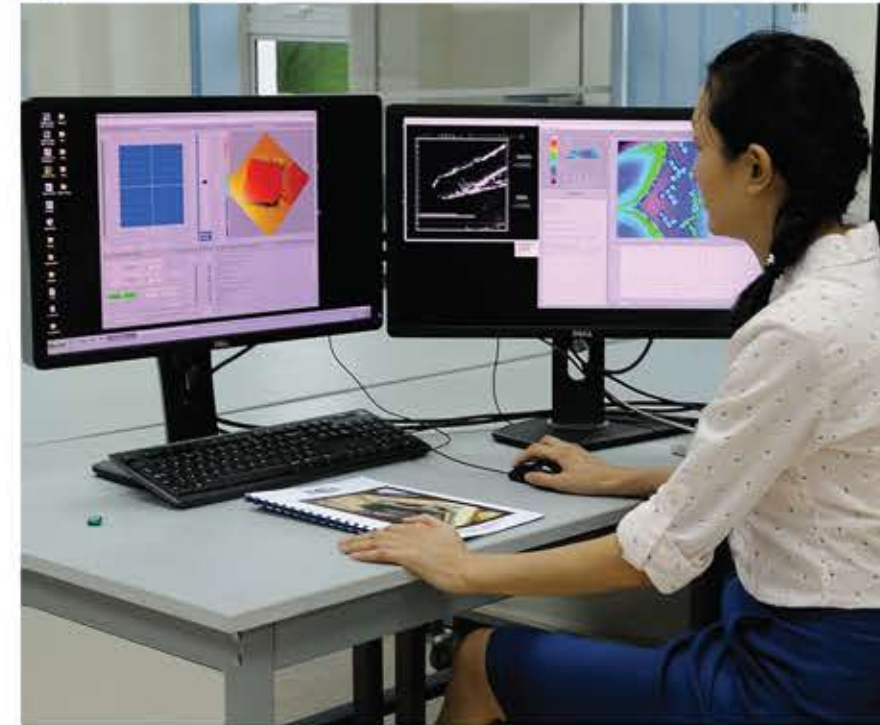
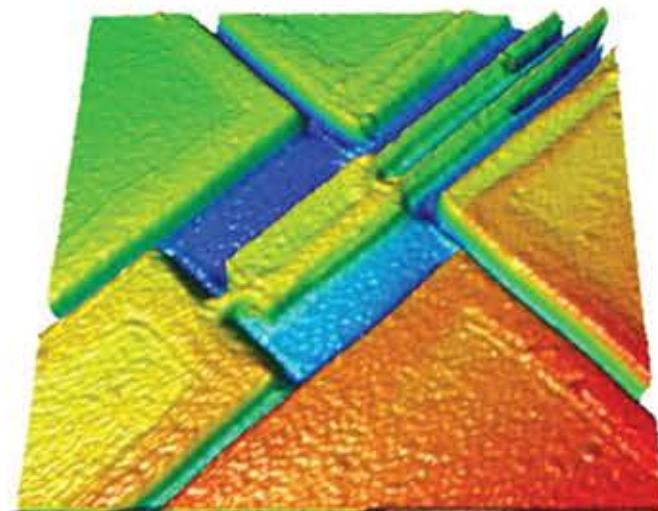
The XYRIS 4000 CL (Confocal Laser) is a compact state of the art surface profiling system that is capable of measuring form and thickness of various surfaces. It incorporates a CCD camera for on screen viewing of the surface under investigation, helping to identify areas or features of interest quickly and easily. The WL (White Light) sensor offers increased performance for spherical or aspherical surface measurement.

MOTION STAGE SPECIFICATIONS

TRAVEL	: 25mm
RESOLUTION	: 0.1 / 0.01 μm
FEEDBACK	: Linear encoder
ON AXIS ACCURACY	: 2 μm (>full 25mm range)
MAX SPEED	: 25mm/s

SENSOR SPECIFICATIONS

TYPE	ILLUMINATION SOURCE	SPOT SIZE	MEASUREMENT RANGE
CL	30/70 μm	CL	2.5 - 20.0 mm
STAND OFF DISTANCE	SENSOR RESOLUTION	SAMPLING RATE	
15 / 30mm	0.25 - 2.0 μm	100 kHz	



BODDIES

The data generated by the XYris systems is available as a 3D surface map. Therefore standard tasks such as extraction of surface information; wear analysis, feature measurement, profiling cross sections, roughness and form analysis, and volume calculation are easy to perform and built into our stand alone analysis package BODDIES, with a wide range of common 2D and 3D parameters provided to standard (ISO and ANSI).

The standard tools offered include, data manipulation, form fitting (planes, spheres, polynomials), surface roughness parameters in both 2D and 3D, data export, positioning data for artefacts, geometric data; and many others. The software supports data output in many formats, and graphical data for report writing.

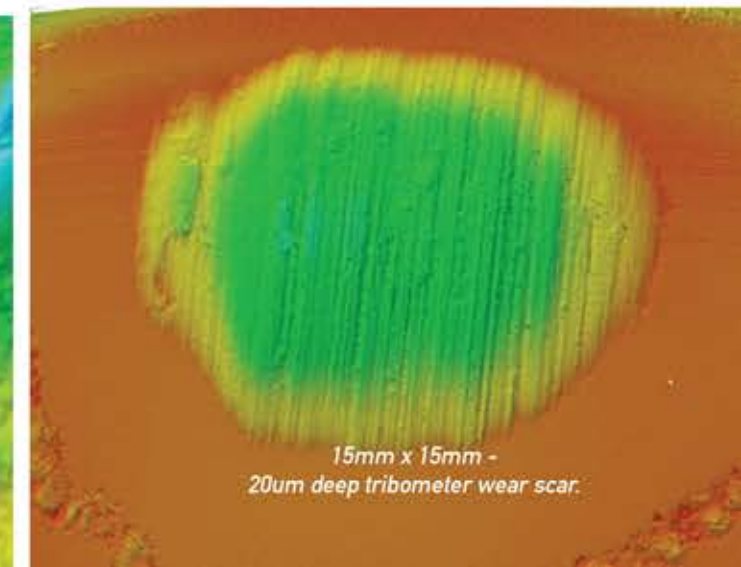
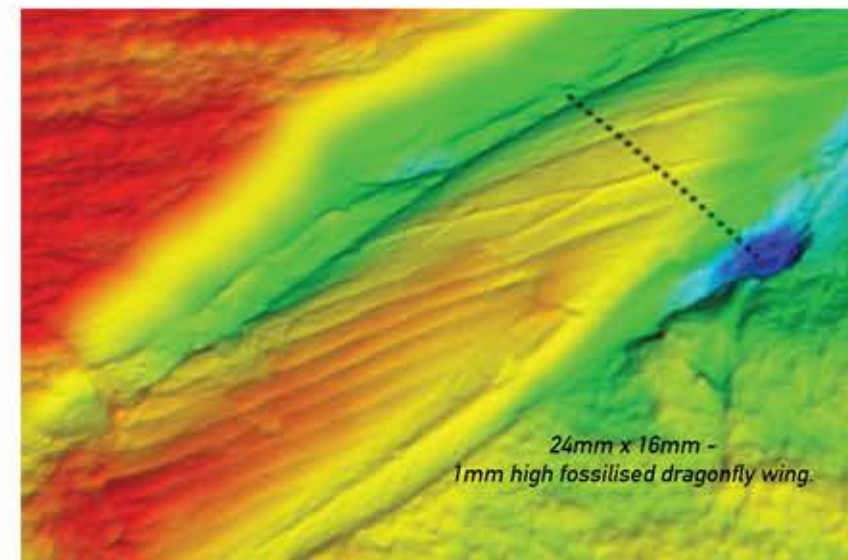
BODDIES package also offers customers a number of unique analysis tools. Many of these features are world leading, and are supported with leading scientific journal publications.

STAGES

STAGES is the XYRIS systems control and automation package.

The software can be modified to the customer requirements. In such systems a specially designed user interface is constructed based on the customer's specifications.

- **Surface Wear Analysis**, of standard and free form surfaces. In the later case the user can measure a free-form surface on the XYRIS system, complete a wear study and remeasure the surface to detect the surface wear.
- **Cell Analysis**. This tool allows the user to investigate surface features and to then determine the statistical nature of the surface, for example, the number of holes in a measured area, or the surface area of selected features.



XYRIS SYSTEM SERIES

3D (Three Dimensional) Measurement System

SENSOR TYPES

XYRIS 2000

Standard 3 axis measurement system offering a wide range of sensors and motion system performance.

XYRIS 4000

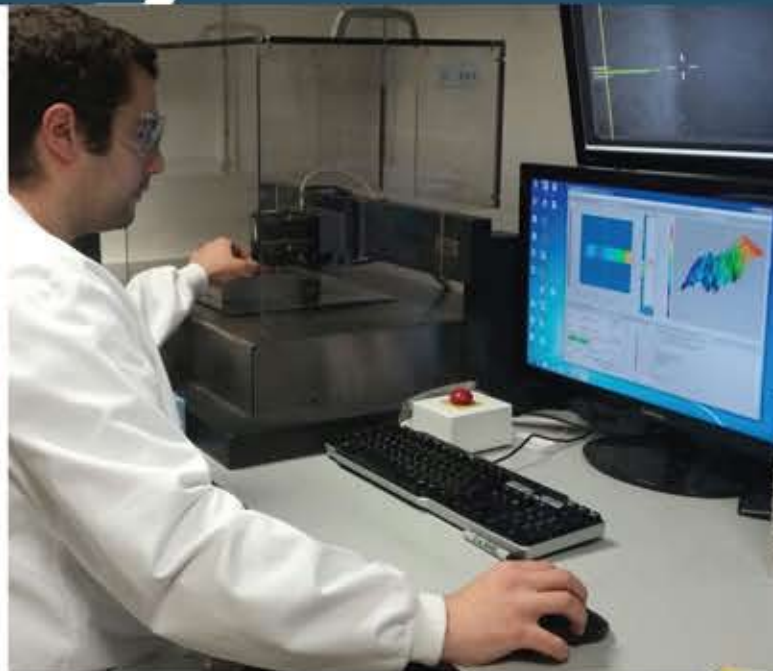
Standard compact 3 axis measurement system, which can be designed to be portable. All sensor types can be accommodated, but the motion system is limited to high precision 25mm axes in X, Y and Z.

XYRIS 5000

TaiCaan work closely with all our customers to ensure you get the solution you require. There are a number of example systems shown on the company web site. These are built for specific application, and often include rotary axes.

XYRIS 6000

An air-bearing system with linear motors in the X, Y axis. The system is normally constructed with a 350mm x 350mm motion system, in X, Y. All sensor types can be accommodated.



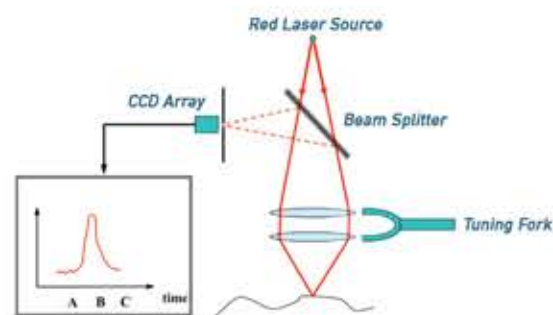
XYris 2000 Surface Profiler

CONFOCAL LASER (CL) SENSOR

A very small (2 micron) spot size and 10nm resolution makes this sensor ideal for measuring the smallest of features (sub micron level). It is also capable of measuring the thickness of transparent layers and has an integral video microscope for targeting and operator feedback during setup and operation.

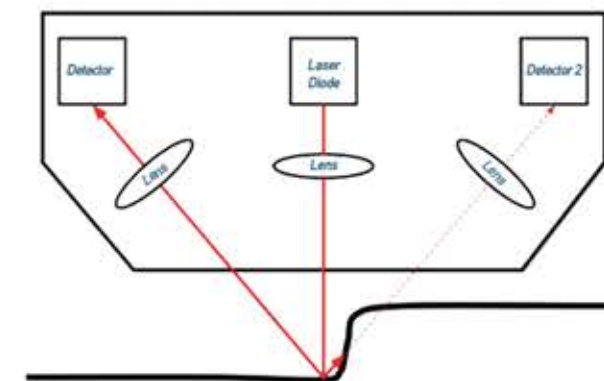


The Targeting Video Microscope view (CL Systems only) 1.1 x 1.3 mm. The text in the image is approx. 100 x 200 microns on a silicon wafer.



TRIANGULATION LASER (TL) SENSOR

Ideally suited to more coarse applications where there is a large variance between the highest and lowest points on the surface or there are very steep features to be measured. This sensor has large gauge ranges (up to 2mm) and the twin detector configuration greatly improves receiving performances and reduces shadowing effects on heavily crenulated surfaces.

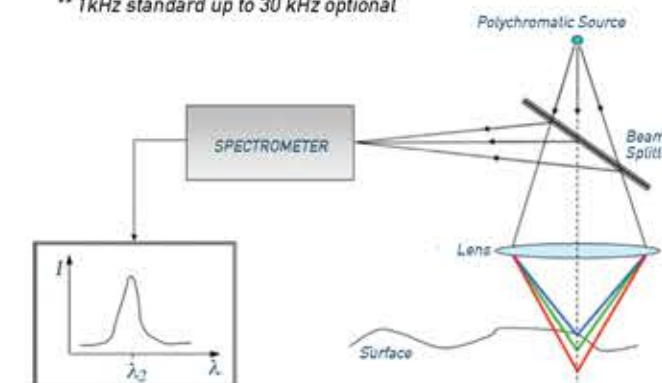


Schematic of Laser Triangulation system where the reflected light is monitored at two receiving elements to minimise shadowing caused by large steps in the surface profile blocking the return path of the reflected light.

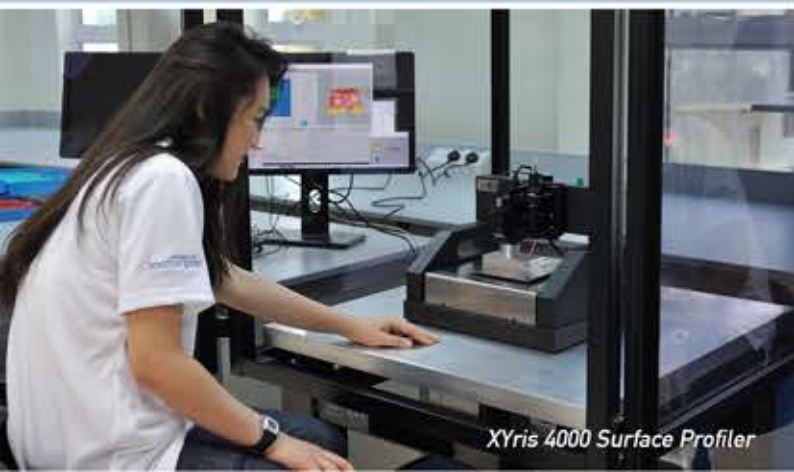
CONFOCAL WHITE LIGHT (WL) SENSOR (CHROMATIC SENSOR)

This sensor offers small spot sizes* and high frequency** sample rates. Its' high performance on spherical or aspherical surfaces make it ideally suited to applications where high accuracy measurement of curved surfaces is required.

* 7 μ m standard and 2 μ m optional
** 1kHz standard up to 30 kHz optional



Schematic outline of the measurement principle for the white light sensor. The chromatic aberration of the lens causes a variance of the focal length depending on wavelength. The wavelength peak detected by the spectrometer determines surface displacement.



XYris 4000 Surface Profiler