



Accurate Measurements/Fast and Simple Operation

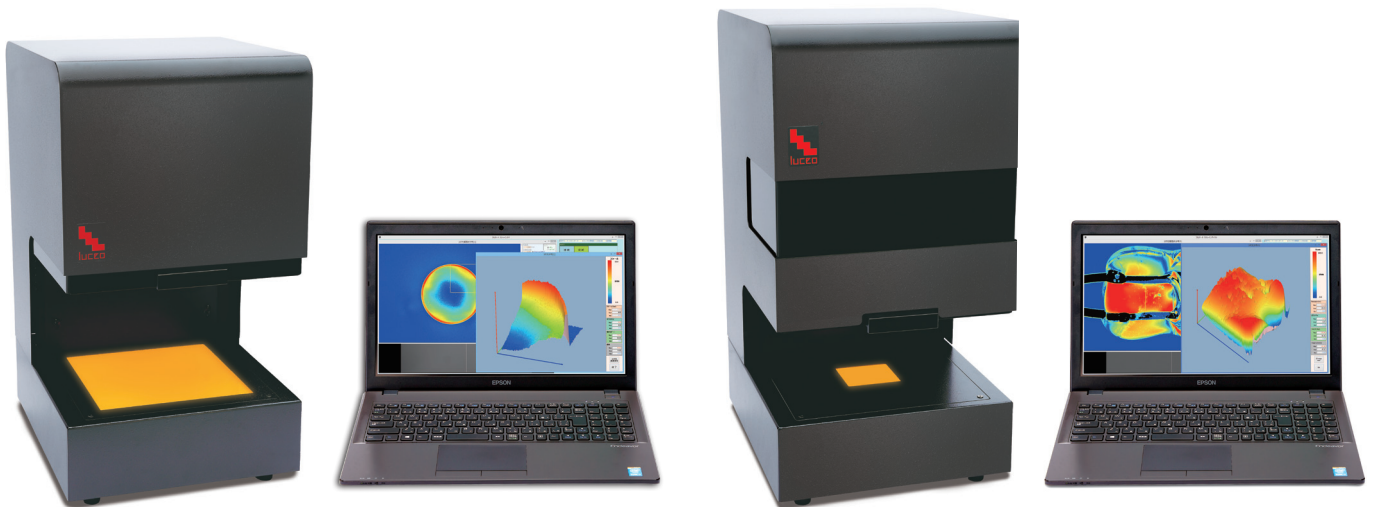
# Polariscope

## Fullauto StrainEye LSM-9001 product family

Measures residual stresses by observing strain in glass or plastics.

Capable of also reporting direction of stress

Manufactured with high-quality optical filters.



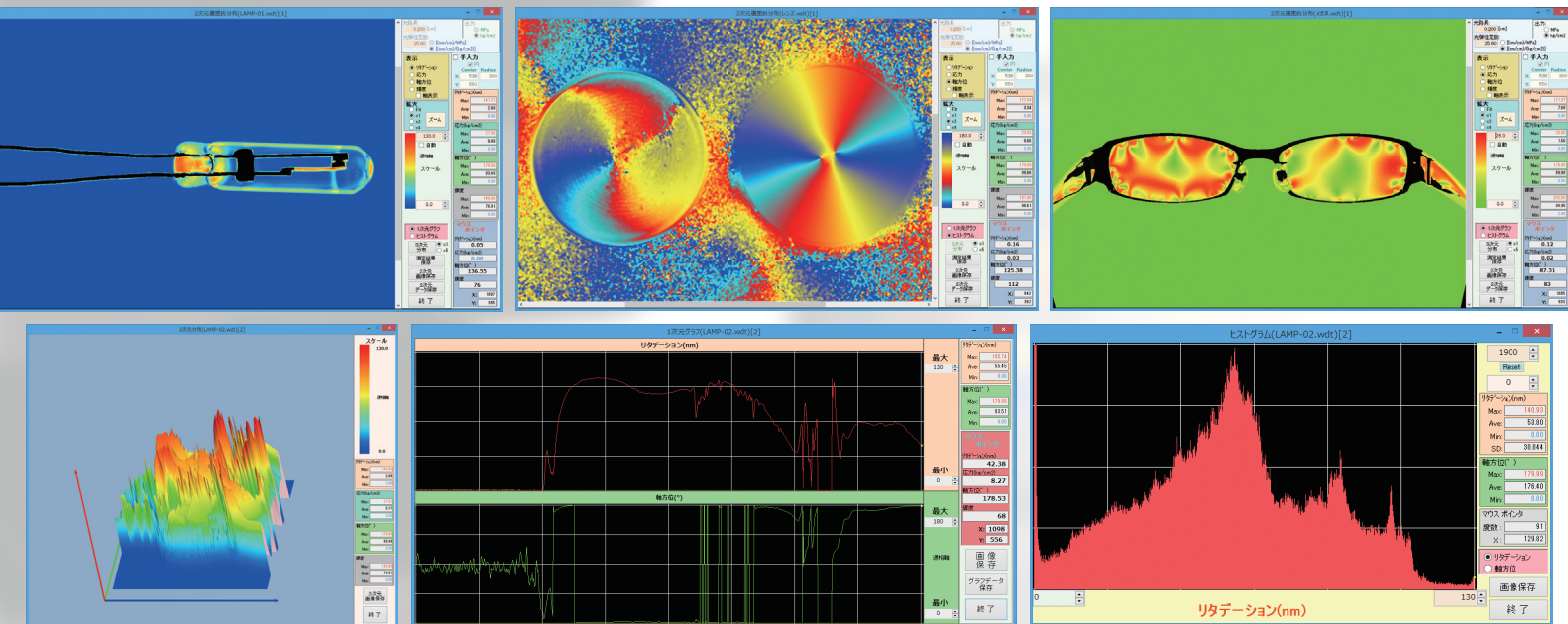
# “Visualization” of strain

Simple Operation

Rapid scans

Accurate measurements

The Polariscope LSM-9001 product family  
measures “invisible non-uniform force” in transparent materials and  
solves various problems associated with “strain”.



## Anyone can easily operate

Measures stress automatically by placing sample in position and starting scan.

## Accurate measurement at any time.

Our unique technology and history of high-quality product development make it possible to measure strain very accurately. With the LSM-9001, transparent products that require high accuracy and precision can be reliably manufactured.

## Available to various materials

The LSM-9001 can be used to quantitatively measure residual stress in glass products, inspect strain in plastic products, measure retardation in thin films, and look for the presence of strain in crystalline materials.

## Rapid, Reliable Measurements

Rapid measures through a PC interface shortens preparation time and allows for saving of data and plots in many formats.

## Reliable Source

The LSM-9001's high luminance LED light source allows for long life and low power consumption, reducing downtime and operating cost.

glass products		Plastics products · synthetic resin
<b>Large float glass plate</b> automotive glass · industrial new material glass · Optical glass materials · glass wafer · thermister · glass paste	<b>Material of optical glass</b> Crystal · quartz · lens · glass material, etc.	<b>Large resin plate</b> resin film
<b>Glass tube</b> various types of lamps · electronic tube(vacuum tube, gas-enclosing tube), sealing glass tube for electronic component · combustion partition for heating appliance	<b>Optical glass element</b> optical filter · LD cover glass · ball lens · lens array · lens · prism · V-groove substrate	<b>Injection-molded resin products</b> LCD monitor cover · sun visor · resin container, etc.
<b>Laboratory glassware</b> flask and beaker · test tube and connecting tubule · analysis component · evaporating dish · watch glass, etc.	<b>Glass container</b> Vial · bottle for beverage · wide-mouth bottle · preservation container · glass · dish	<b>Resin optical elements</b> cover glass · lens array · lens · prism, etc.

## Product Features

### 1 Display a distribution chart that is associated with values and directions of strain.

Distribution chart is composed of data per pixel taken by the embedded digital camera restoring the result on the computer monitor.

### 2 Measurements and Results Displayed Quickly

Some instruments take a long time to measure and display results. The LSM-9001 measures and displays results quickly for faster turnaround on measurements.

### 3 Adopt in-house polarization elements(polarizer · wave plate) in LSM-9001 products.

Luceo uses these high-quality components in the LSM-9001 to product high-quality, reliable measurements.

### 4 Two models of the LSM-9001 are available based on sample size.

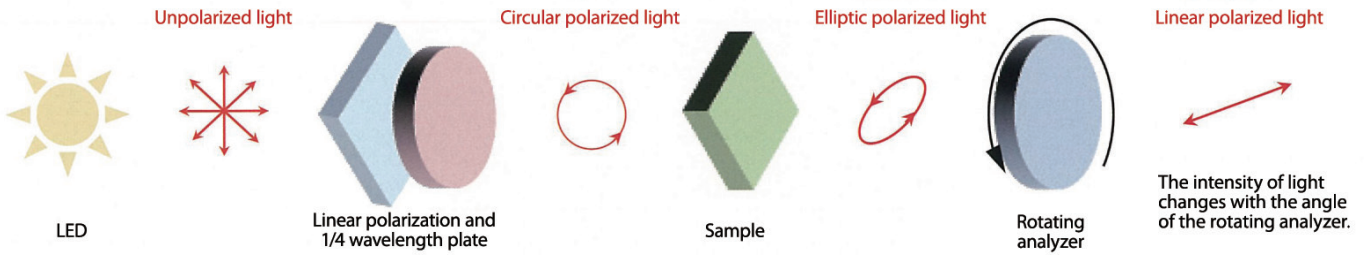
#### LSM-9001LE

Measurement Area: 175x175mm  
Suitable for bigger samples

#### LSM-9001S

Measurement Area: 10x10 to 60x60mm  
Equipped with a 6X zoom lens for measurements on smaller samples.

# The principle of measurement: Rotating Analyzer Method



The polarization state is changed to an elliptic polarization by the influence of birefringence when a circular polarized light enters a sample having strain inside. After that just the component of light parallel to the direction of a transmission axis of a polarizer passes through as linearly polarized light out of the elliptic polarized light - this measurement technique is called the rotating analyzer method. In this case, the intensity of light going through the rotating analyzer shows specific changes according to the state of the ellipse. This instrument captures images by a camera based on the 4 different angles of the rotating analyzer and calculates the state of polarization (ellipticity and inclination) at each angle. Then the strain is calculated by measuring differences in the polarization between with a sample and a reference (when no sample is in the instrument).

## Specifications

Model name	 LSM-9001LE	 LSM-9001S
Size (body)	W300×D353×H540 mm	W300×D353×H580 mm
Weight (body)	19kg	21kg
Circular polarizing plate size	W200×D200 mm	W70×D70 mm
Sample placement space (height)	0 ~ 160mm	0 ~ 115mm
Measurement range	Re : 0 ~ 130nm	
Inspection method	Rotating Analyzer Method	
Setting wavelength	590nm	
Repeat accuracy(Pixel)	σ=1 nm	
Measurement area size	175×175 mm	MAX: 60×60 mm MIN: 10×10 mm
Effective pixels	1100×1100	
Light source	High-Luminance LED	
Power source	AC 100-240V 50/60Hz DC input 24V 1.6A	
Power consumption(body)	38W	
Components	Main body, computer,cables	
Accessory	AC/DC adapter, main body cover	
OS	Windows10(64bit) Japanese/English	

**For more accurate measurement**



The instrument is interlocked so no measurement will take place with the door open. In the case of large sample measurements, the "darkroom mode" can be enabled to defeat the interlock.

**LUCEO has been a specialist of optical instruments for over 50 years.**

LUCEO is the pioneer who produces polarizers and wave plates by mounting in-house optical films to optical glass. We provide product portfolio taking advantage of polarization technologies adapting to the changing social needs consistently.

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In LUCEO showroom, you can experience demonstrations of inspection and measurement looking closely at our various products. Please contact us.