



## OPTICAL DILATOMETER, FLEXIMETER HOT STAGE MICROSCOPE

### High Temperature Vision Materials Analysis for a Competitive Edge in Advanced Technologies

Expert System Solutions (ES) creates software, innovative lab tools and vision systems that allow companies in several industrial sectors, especially the ceramic sector, to maintain a competitive edge in advanced technologies.

The innovative patented backlit vision system allows for very accurate measurement (sub-micrometer level) of dimensions and shapes. The unique vision system enables analysis of samples

that were impossible to measure before. The ES heating microscope performs advanced characterization of materials at high temperature, to determine sintering behavior, glass transition point, surface tension, wetting angle, compatibility, bending, etc.. The optical dilatometer allows operators to measure absolute thermal expansion or sintering behavior in a single test. The optical fleximeter is used to study the bending and coupling temperature of materials.

*Expert Systems Solutions vision characterization equipment offers many competitive advantages to customers:*

- double the number of tests: you only measure once the real values
- double your accuracy: no corrections, no calculations only the real direct measurement
- double the samples you can measure: weak samples, irregular shaped samples, or thin foils all can be measured
- the only system that uses back lighting, for superior edge vision
- the only system that uses blue light, for reduced interference of heat radiation
- the only system that has a completely closed oven, for gas control
- the only system that measures the true temperature for the whole sample
- the only system that uses a small oven for faster ramps and cool down
- the only system that needs no calibration corrections

*surface tension:*

- the only system that can directly measure on a sphere the surface tension of materials



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#### Misura-ODLT

High resolution non-contact dilatometer for expansion and contraction analysis.

- high accuracy
- for (thermal) expansion and contraction analysis

#### Misura-ODHT

Double beam non-contact dilatometer for sintering analysis.

- for sintering analysis with larger contractions
- automatic calculation of essential parameters

#### Misura-HSM

High temperature microscope for glass analysis of sintering, surface tension, softening point, melting and compatibility.

- also for glass and metal paste analysis
- materials compatibility
- simultaneous dual sample comparisons

#### Misura-Flex:

High temperature non-contact bending analysis, to determine the set point of a glaze on a ceramic body (like Steger tensiometer), to measure bending caused by sintering or thermal expansion differences between materials, bending from water adsorption or drying, or pyro-plastic deformation caused by the weight of the object.

