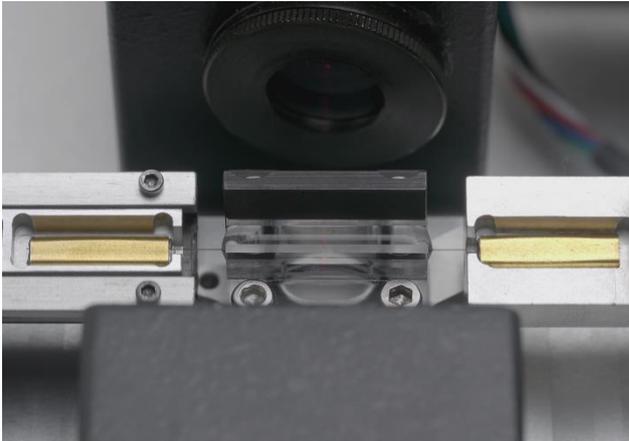
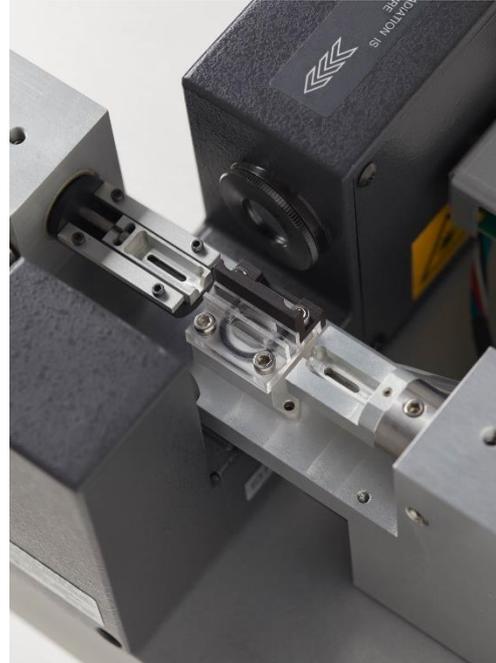


DSM770 – Dynamic Swelling Module



The Dia-Stron **D**ynamic **S**welling **M**odule – DSM770 measures the diameter of single fibres immersed in water, either dynamically or after a time delay.



General Information

Principal benefits

- Easy and flexible addition to a FDAS770
- Direct fibre diameter measurements
- Automated water handling operations
- Minimal amount of liquid used per sample
- Short optical path in water
- Small footprint, low weight, robust design
- Can be integrated onto the ALS1500 automation platform

Application examples

- Damage related claims
- Technology development e.g. colourants & relaxers
- Fibre scientific understanding

System Description

The DSM770 instrument is a versatile addition to the FDAS770 (Fibre Dimensional Analysis System) for measurements of fibre diameter when immersed in water. The system is based on a laser scanning micrometer designed for non-contact, rapid and accurate dimensional measurements. Fibre diametral swelling can be evaluated dynamically or after a time delay. The DSM wet cell can be quickly removed for fibre diameter measurements in the dry.

The UvWin software can display and export dimensional data as a function of time: cross-sectional area, minimum/maximum or mean diameter absolute or relative values.

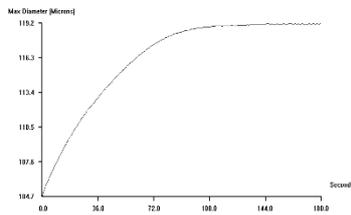
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Detailed Description



Typical swelling profile of a hair fibre



Removable DSM wet cell



DSM control unit

DSM770

The DSM770 module features automated operations for priming, filling, measuring and draining of the measurement wet cell using an adjustable pressure gauge. The DSM770 wet cell was designed such that the optical path in liquid is kept to a minimum, the water consumption is limited for automated multiple fibre runs, and the formed water meniscus is stable.

The DSM770 is a complementing addition to the FDAS770 instrument, enhancing existing system's dry measurement capability with wet dimensional testing. The DSM770 flexibility allows existing systems to continue dry dimensional measurements and to be reconfigured for wet testing within a matter of seconds.

Software control & data

The UvWin software offers two measuring methods for the DSM770. The swelling method can measure the dynamic swelling of a fibre in rotation over a set time. The minimum, maximum and mean fibre diameters are recorded while cross-sectional area (CSA) data is calculated. UvWin can display these dimensional properties as a function of time in absolute values or as percentage change. With the second method, fibres can be immersed in water for a set amount of time before dimensional measurements are captured over a defined number of slices in a process similar to the dry dimensional method. This DSM method is especially suited to CSA estimation prior to wet fibre tensile testing.

UvWin analysis tools provide dimensional data exporting in addition to dynamic swelling data analysis: swelling rate & plateau or differential swelling as a function of time (CSA, minimum/maximum or mean diameter values).

Content

DSM770 Control Unit
2 x DSM770 Wet Cells

Requirements

- An FDAS770 is required for DSM770
- Dry, clean compressed air @ 4.5bar min

Specifications

Diameter range	10-2,000 microns
Resolution	0.01 micron
Repeatability	±0.03 micron
Wet cell dimensions (internal)	20x2.5mm LxW
Liquid bottle size	1 litre
DSM control unit size	400x460x300mm WxDxH

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