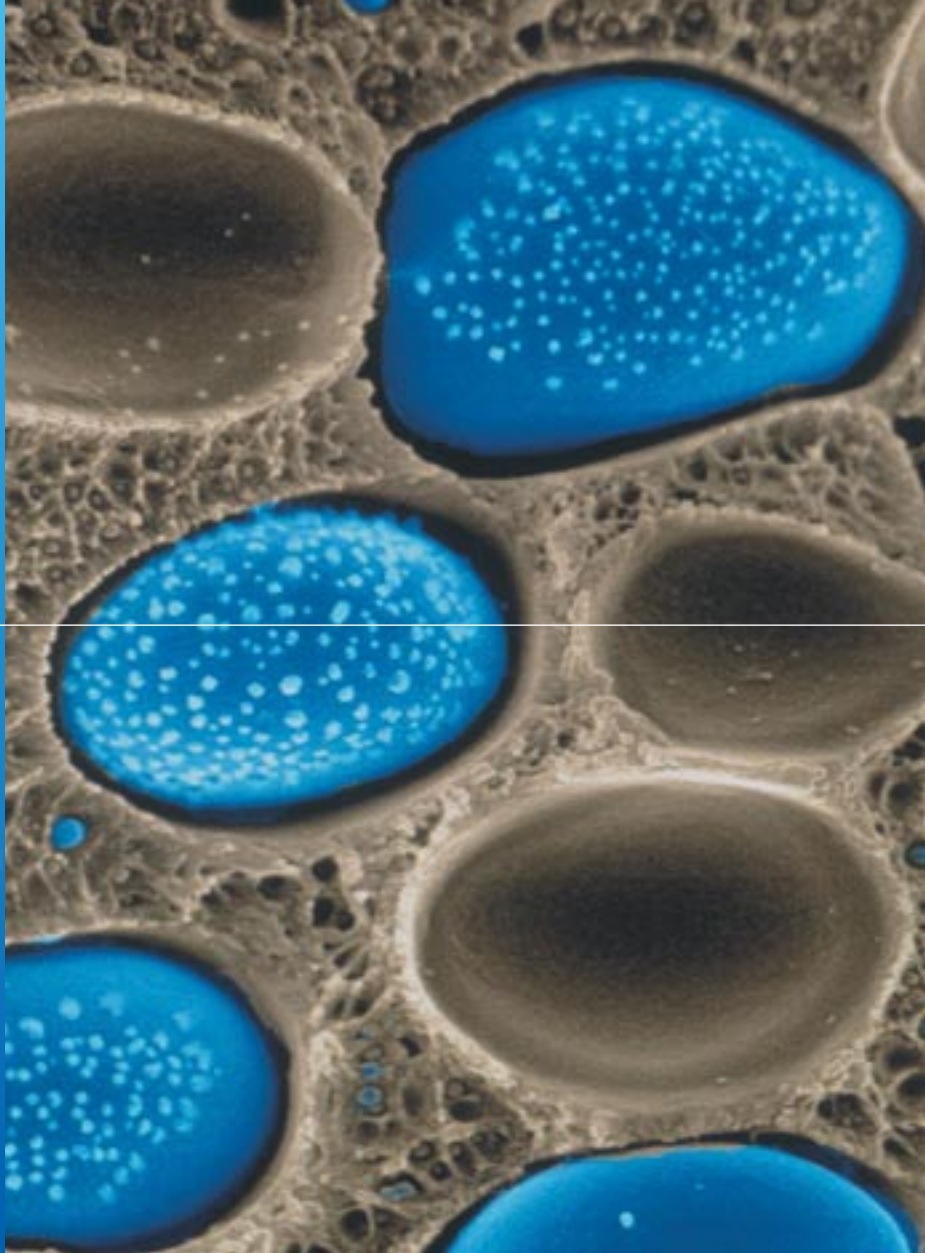


RHEOLASER LAB

MICRORHEOLOGY &
END USE PROPERTIES
ANALYSIS



Formulation
Smart scientific analysis

The logo graphic for Formulation, consisting of several overlapping, curved lines in various colors (green, yellow, orange, red, purple) that form a stylized, abstract shape.

A NEW RHEOLOGY APPROACH

TO CHARACTERISE END-USE PROPERTIES

Microrheology 

Rheolaser™ is the first ready-to-use instrument to perform microrheology experiments.

Microrheology is a new domain of Rheology, which characterises the structure of the material at the micron scale.

Visco-elastic properties of soft materials such as emulsions, gels, polymers etc... are analysed by measuring the displacement of the particles in the material due to the thermal energy (Brownian motion).



RECOVERY

SHAPE STABILITY

DRUG DELIVERY

TEXTURE

STABILITY

GELATION

BENEFITS OF MICRORHEOLOGY

NON CONTACT MEASUREMENT

Measurement is performed without any external stress (thus always in the linear visco-elastic regime). It allows the analysis of fragile materials (weak gels, creams...) without sample modification nor destruction.



VISCOELASTIC PROPERTIES VS. TIME

Measurement is performed in a glass cell:

- Structure recovery
- Gelation process
- Long-term stability
- ...



EASY SAMPLE HANDLING

Measurement is performed in a glass cell:

- No sample deformation or destruction
- No evaporation or drying
- No geometry configuration
- Disposable measurement cell



THE FIRST READY TO USE
MICRORHEOLOGY
& END-USE PROPERTIES
ANALYSER



THE OPTICAL MICRO-RHEOMETER:

Rheolaser™ has 1 to 6 measuring positions. The optical detection system uses Multi-Speckle Diffusing Wave Spectroscopy (MS-DWS). It measures interfering backscattering waves resulting from laser light multi-scattered by the particles. This accurate technique enables detection of small particle displacements. Particle mean square displacement data enables access to the microrheology parameters.



MULTI APPLICATIONS

The easy sample handling and automatic data processing enables different types of experiments to be carried out.

- Characterization at rest
- Evolution (gelation, melting...)
- Structure recovery & thixotropy
- Stability (vs. ageing time)



MULTI DATA ANALYSIS

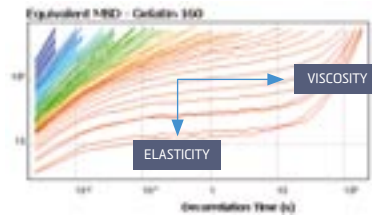
The software has been designed for both experts and non experts in rheology with automated one-click results or fully configurable parameters.

- Mean Square Displacement (MSD)
- Solid-Liquid Balance (SLB)
- Elasticity Index (EI)
- Macroscopic Viscosity Index (MVI)
- Elastic & Viscous Moduli (G' , G'')
- Physical parameters (t_R , D_m , η)



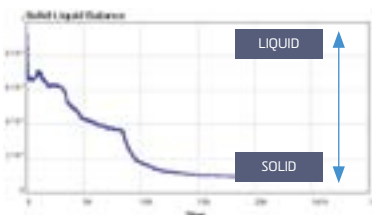
KEY PARAMETERS IN 1-CLICK

The measurement provides a viscoelastic signature of the product which is the MSD & 3 automatic parameters to quantify its end-use properties.



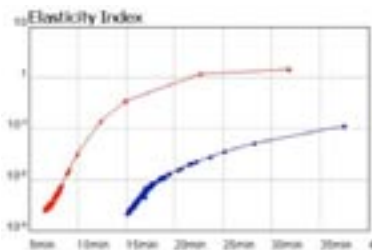
MEAN SQUARE DISPLACEMENT (MSD)

- Visual signature of the product's viscoelasticity.
- ⇒ Compare qualitatively various products in a blink.



SOLID-LIQUID BALANCE (SLB)

- Ratio between the solid-like and the liquid-like behaviour of the studied materials.
- ⇒ Monitor properties such as : adhesion, spreadability, gel point, shape stability, physical stability, etc...



ELASTICITY INDEX (EI)

- Elasticity strength in the studied materials.
- ⇒ Monitor properties such as : mesh/pore size, hardness, recovery after a shear, gelation...



MACROSCOPIC VISCOSITY INDEX (MVI)

- Quantify and compare the macroscopic viscosity at zero-shear.
- ⇒ Monitor properties such as : effect of a thickening agent, texture, flowability, physical stability, etc...

APPLICATION FIELDS



Cosmetic



Paint & Ink



Food



Polymers...



Pharmaceutical



→ SPECIFICATIONS

	RHEOLASER LAB	RHEOLASER LAB6	RHEOLASER LAB6+
Emission	Light source 650nm	Light source 650nm	Light source 650nm
Detection	MS-DWS	MS-DWS	MS-DWS
Cell Volume	4 or 20ml	4 or 20ml	4 or 20ml
Storage positions	6	6	6
Simultaneous measurements	1	6	6
Temperature range	RT +5°C to 60°C	RT +5°C to 60°C	RT +5°C to 90°C
l* measurement	No	No	Yes
Minimum Viscosity (mPa.s)	500	500	30
Dimensions (cm)	60x40x30		
Weight (kg)	36		
Minimum PC configuration	Intel P4 @2Ghz or AMD 6000+ Processor 1 Gb Ram - Microsoft Windows XP		
Recommended PC configuration	Intel Dual Core @2.5Ghz or AMD X2 Processor 4 Gb Ram - Microsoft Windows XP, or 7, 32 bits		

Photo de couverture © CNRS Photothèque - Billes de silices prises dans un polymère

MICRORHEOLOGY : A NEW WAY OF INVESTIGATING SOFT MATERIALS

«Microrheology looks at the thermal motion of small particles embedded in a material in order to extract its bulk rheological properties. This experimental technique opens the investigation of material properties that are difficult to access or inaccessible by conventional rheology such as the visco-elastic response of fragile materials.

It is a non-intrusive technique, and thus particularly well suited to study fragile materials such as weak gels (emulsions, yoghurts, cosmetics, ...). No macroscopic stress is applied to the sample which avoids its destruction or its modification. This techniques increases our understanding of these materials.»

Annie Colin
Rheologist Professor
University of Bordeaux I
Institut Universitaire de France

Formulation
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10, impasse Borde Basse
31240 L'Union - France
+33 (0)5 62 89 29 29



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