

MICROSTRUCTURE EVOLUTION THERMAL ANALYSIS



A DEEPER LOOK AT YOUR
SAMPLES MICROSTRUCTURE

MONITOR ANY PHYSICAL PHENOMENON

Crystallization, melting,
polymorphic transition...

ACCURATE

4 - 90°C
0.1 - 25°C / min
Optical non-invasive
measurement

VERSATILE

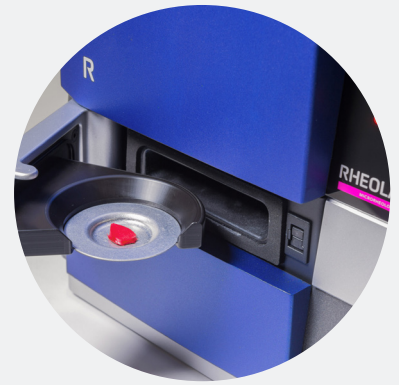
Any sample size (0.05-5g)
Any sample structure
Any sample form

STRAIGHTFORWARD

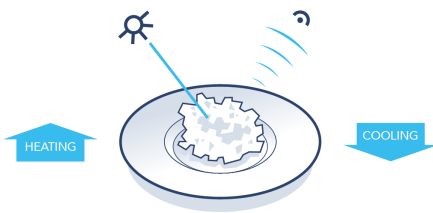
1-click measurement
Direct sampling
No denaturation
Disposable sample holders

TAKE A DEEPER LOOK AT YOUR SAMPLES MICROSTRUCTURE

Rheolaser Crystal enables to monitor microstructure evolution in heterogeneous products with an innovative optical method, combining a non-invasive measurement with accurate temperature control and sufficiently large sample volume (0.05 - 5g) to overcome problems of heterogeneities. This enables to measure finished products, such as food, cosmetics or pharmaceuticals, and identify transition temperatures of proteins, polymers, waxes or any fatty compounds.



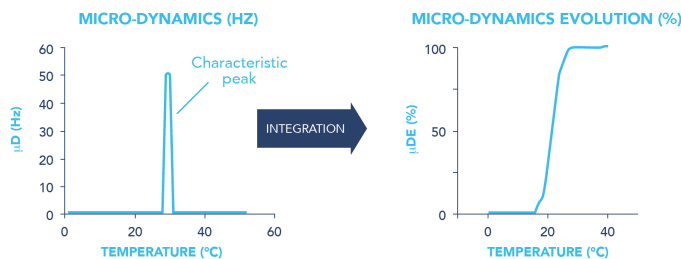
MEASUREMENT PRINCIPLE



- Wax crystallisation and melting
- Fat blooming prediction
- Protein denaturation
- Crystalline phase transitions
- Blend compatibility studies

Rheolaser Crystal uses the Diffusing Wave Spectroscopy principle (DWS). Light is scattered by the particles, creating an interference pattern (Speckle Image). The variation of this image is directly related to the motion of the particles: the faster they move, the faster the Speckle Image changes. By a mathematical analysis of this variation, decorrelation functions can be computed and then processed, to obtain a characteristic time τ , as a function of time or temperature.

Values of $1/\tau$, or Micro-Dynamics (Hz), are then plotted against time or temperature, resulting in characteristic peaks when the product shows a microstructural evolution, such as a phase transition or any other physical event. The signal can then be integrated for an easier visualisation, obtaining the so-called Micro-Dynamics Evolution (%).



KEY BENEFITS

A VERSATILE DEVICE

Any sample can be analysed, no matter its form (liquid, solid, gel...) or the volume available (from 0.05g for precious products, to 5g for heterogeneous samples). Use the instrument for complex mixtures and blending compatibility studies.

CHARACTERIZE OUR SAMPLE AS IT IS

Thanks to the non-instrusive measurement, and to the large and direct sampling, there is absolutely no risk to damage the structure of the sample, or to obtain non-representative data because of heterogeneities. Rheolaser Crystal will just measure your whole sample.

FAST & ACCURATE ANALYSIS

Analysis can be launched in just 1-click, after direct sampling of the product. The optical DWS principle, enabling sensitivity at the nanometer size, combined to a very accurate temperature control, makes Rheolaser Crystal the fastest and most accurate way to monitor microstructure evolution.

APPLICATIONS



TECHNICAL SPECIFICATIONS

Temperature Range	4 - 90°C
Temperature Ramp Speed	0.1 - 25°C/min
Sample Volume	0.05 - 5 g
Sample Form	Any (liquid, solid, gel)
Disposable Sample Holder	•
Laser Wavelength	650 nm
Dimensions (cm)	47 x 26 x 34
Weight (kg)	15 kg
Recommended Configuration	Windows 7, 8 or 10, Intel Core i5, 4GB RAM, 32/64 bit



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