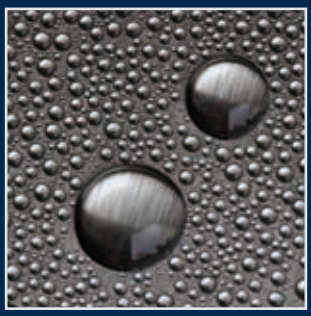
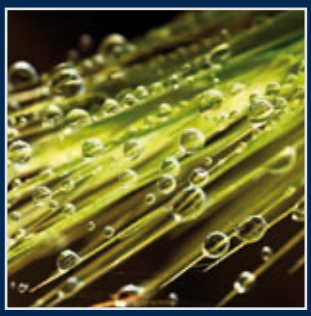
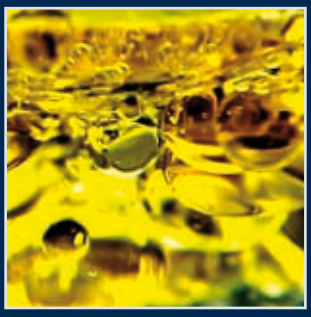
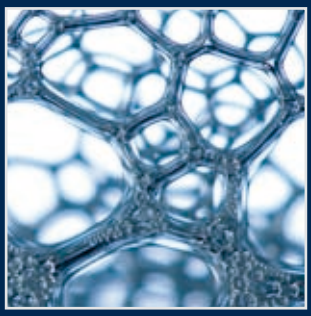
# Measuring instruments for interfacial chemistry

## Product range







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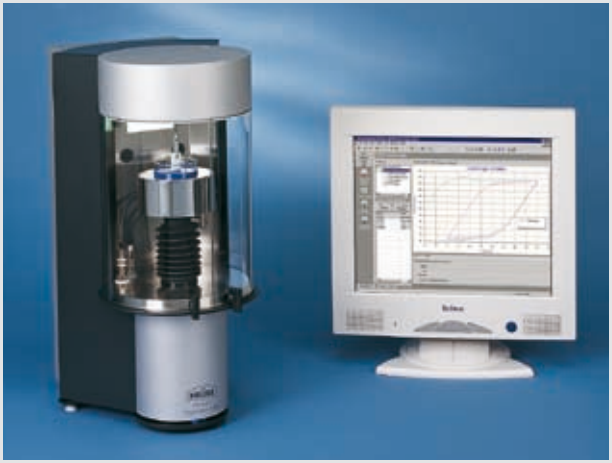
# Processor Tensiometer K100MK2/K100C



Due to their high measuring precision and maximum flexibility in software control, the K100MK2 and the K100C are the universal instruments among tensiometers. Whether it's for quality control or sophisticated measuring in research and development, the K100 series combines state-of-the-art technology with a high degree of automation.

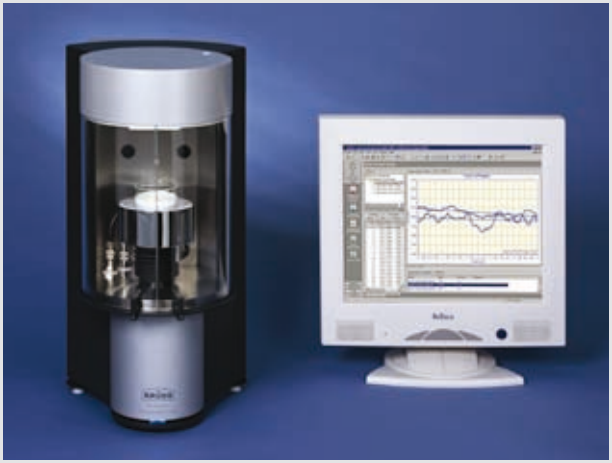
## FEATURES

- **Surface and interfacial tension measurement of liquids**
- **Online contact angle measurement**
- **CMC measurement**
- **Surface energy determination**
- **Liquid density determination**
- **Sedimentation and sediment resistance measurements**
- **Integrated ioniser**
- **Automatic calibration and adjustment of the force measuring system**

## APPLICATION

- **Surface-active agent development**
- **Wetting properties of tablets, pharmaceutical active ingredients and auxiliary products as well as pigments**
- **Monitoring surface optimization in the production of polymers and foils**
- **Lacquers, dyes, inks**

# Single Fibre Tensiometer K100SF/K100SFA



The Single Fibre Tensiometer K100SF is the process-controlled measuring system for the exact characterization of single filaments. Extremely high measured value resolution combined with the high precision of the mechanical components predestines the K100SF for measuring fibres

## FEATURES

- **Fully automatic measurement of contact angle and absorption**
- **CMC determination (not for K100SFA)**
- **Determination of surface energy on powders, small plates and single fibres**
- **Determination of liquid density (not for K100SFA)**
- **Controlled by LabDesk™ software**
- **Fully automatic measurements on series of fibres with the robot system (K100SFA)**

## APPLICATION

- **Characterization of natural and synthetic fibres**
- **Development of carbon and glass fibre coatings**
- **Optimization of haircare products**
- **Checking the interaction of fibres with the surrounding matrix**

# Tensiometer K11

The Tensiometer K11 combines easy handling with flexible application. The large well-illuminated sample chamber can be opened wide and facilitates the exchange of sample liquid and measuring devices. The measuring data are shown on an easily readable display and can either be printed or transferred to a PC.

## FEATURES

- **Precise and robust force-measuring system**
- **Ideal for solving routine tasks**
- **Liquid density measurement**
- **Fully automatic surface and interfacial tension measurement of liquids**
- **Storage of measuring parameters**
- **Software for data management**
- **Permanent storage of calibration data**
- **Automatic adjustment of the force measuring system**

## APPLICATION

- **Quality control for measuring surface-active agent concentration**
- **Optimal for medium sample resourcing with high measuring precision**
- **Suitable for repetitive routine measuring**

# Digital Tensiometer EasyDyne

The Digital Tensiometer EasyDyne (K20 / K20S) is the reliable companion for professional users who only have to measure surface and interfacial tension occasionally. The EasyDyne can also be used for measuring at controlled temperatures.

## FEATURES

- **Surface and interfacial tension measurement using ring and plate method**
- **Simple, user-friendly operation with large display**
- **Robust electronic measuring system**
- **Data output for PC and printer**
- **Economical technology**
- **Permanent storage of calibration data**
- **Battery operated**

## APPLICATION

- **Measurement in the quality control laboratory**
- **Manual transformer oil control**
- **Ideal for occasional measuring tasks**
- **For on-site measurements**

# Spinning Drop Tensiometer SITE100

Automatic image analysis simplifies the measurement of extremely low interfacial tensions with the Spinning Drop Tensiometer SITE100. Excellent temperature control and optimum synchronization of the instrument allow the sample to be observed over a long period of time at constant conditions.

## FEATURES

- **Measurement of extremely low interfacial tensions**
- **Excellent temperature constancy**
- **High synchronization**
- **Small sample sizes**
- **Highly accurate measurements thanks to automatic image analysis**

## APPLICATION

- **Development of emulsions and microemulsions**
- **Development of surface-active agent systems for tertiary oil recovery**
- **Emulsifier development**
- **Absorption properties´ behaviour at phase boundaries**

# Drop Volume Tensiometer DVT50

The Drop Volume Tensiometer DVT50 allows the interfacial tension between two liquids to be measured, at a variety of interface ages. At the same time, the DVT50 offers fully automatic measurement for dosing speeds and temperatures.

## FEATURES

- **Automatic dynamic interfacial and surface tension measurement**
- **High measuring precision**
- **Large dynamic area of interfacial formation**
- **Automatic cleaning cycles**
- **Measurement between cloudy liquids possible**
- **No measuring corrections necessary for interfacial tension**
- **Small sample volume**

## APPLICATION

- **Development and assessment of emulsifiers**
- **Food chemistry**
- **Liquid explosives**

# Bubble Pressure Tensiometer BP100

The BP100 measures the dynamic surface tension of liquids using the maximum bubble pressure method. Fast wetting and dewetting processes can thus be fine-tuned according to application. The whole measuring process is controlled with a PC. The data will be collected, displayed and if necessary used for further evaluation.

## FEATURES

- **Simple operation**
- **Direct measurement of bubble pressure**
- **Precise determination of surface age and bubble frequency**
- **Very large dynamic range**
- **Short measuring times**
- **Determination of diffusion and adsorption kinetics**

## APPLICATION

- **Surface-active agent development**
- **Spraying processes**
- **Detergents and cleansing agents**
- **Coating and printing processes**
- **Electroplating bath concentration control**

# Bubble Pressure Tensiometer PocketDyne

The tensiometer PocketDyne stands out with its ease of use, portability and extreme robustness. Its integrated microprocessor makes PocketDyne a software-controlled hand-held bubble pressure tensiometer.

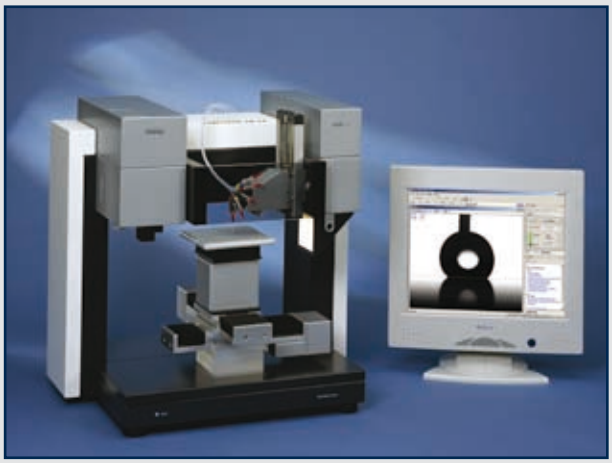
## FEATURES

- **Battery operated surface tension measurement**
- **Measurement of dynamic surface tension**
- **Single-use capillaries minimize the need for cleaning**
- **Storage of measuring results**
- **Digital output and PC software package**
- **Simple calibration and adjustment**

## APPLICATION

- **Monitoring of the surface tension in cleaning, degreasing and electroplating baths**
- **Mobile use during production**
- **Measurement of the surface tension of inks and fountain solutions**

# Drop Shape Analysis System DSA100



The concept of the DSA100 encompasses everything from fully manual to fully automated contact angle measurement. Due to its modular concept, virtually any level of automation can be achieved – even with post-sales additions. With more than 30000 possible combinations, it is bound to fulfil any task.

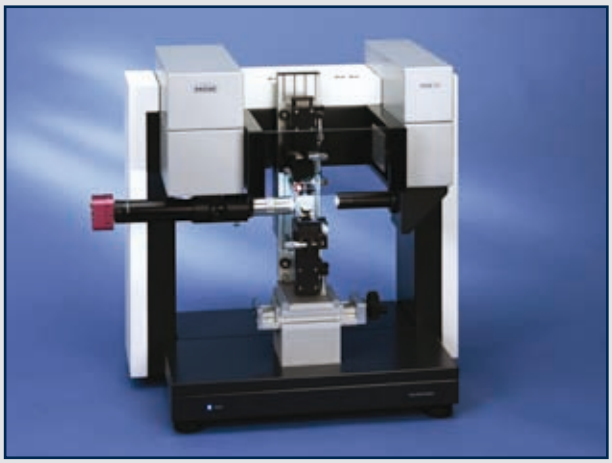
## FEATURES

- **Fully modular**
- **Manual or automatic positioning of the solid**
- **Manual or automatic metering of up to 8 test fluids**
- **Various heating/cooling chambers for different measuring tasks**
- **Simple measurement even of large sample surfaces**

## APPLICATION

- **Determination of surface treatments**
- **Examination of adhesive properties**
- **Surface purity check**
- **Optimization of a broad variety of coatings**
- **QC for wafers and microelectronics**
- **Contact angle measurement on microstructure**
- **Dosing of inject-ink**

# Drop Shape Analysis System DSA100M



With its picoliter dosing system the DSA100M advances into dimensions that can no longer be registered with the naked eye. In this way even the smallest structures in microelectronics, contact angle measurements on single fibres or surface free energy measurements on microscopically small objects are now accessible to contact angle measuring techniques.

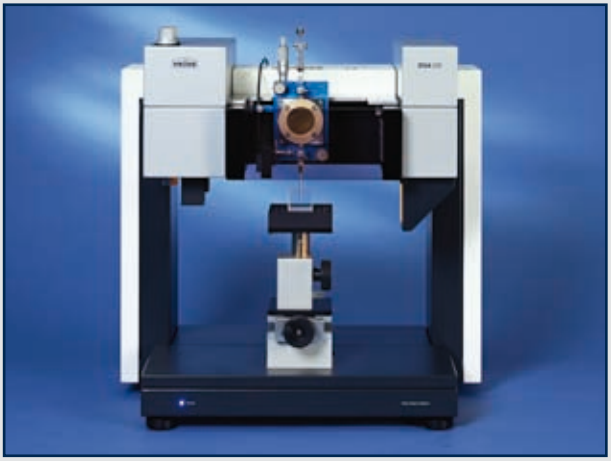
## FEATURES

- **Drop volumes down to a few picoliters**
- **Image recording speeds of several 1000 fps**
- **Special LED illumination for avoiding heat production**
- **Precision sample tables also for automatic surface scanning**

## APPLICATION

- **Single fibres and non-wovens**
- **Fibre surfaces**
- **Electronic assemblies**
- **Smallest mechanical structures**
- **Inkjet technology**

# Drop Shape Analysis System DSA100R



Interfacial rheology is a crucial parameter for the formation and stability of foams in particular. With the DSA100R the elasticity of the interfacial film can be determined both optically and by capillary pressure measurement.
Measurement of the pressure allows considerably higher oscillation frequencies and the determination of the interfacial tension of liquids with similar or identical densities.

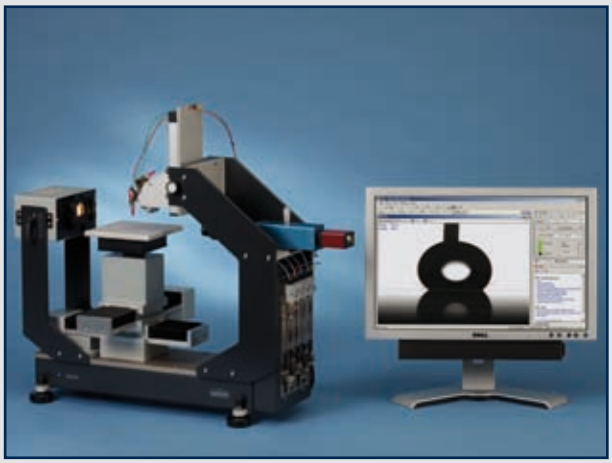
## FEATURES

- **Interfacial rheological properties of surfactant solutions**
- **Measurement of surface and interfacial tension of liquids**
- **Capillary pressure measurement and drop shape analysis**
- **Interfacial tension for liquids with similar or identical densities**
- **Interfacial rheology even with high-viscosity systems**

## APPLICATION

- **Characterization of foams**
- **Measurement of the viscoelasticity of interfaces**
- **Measurement of the rheology at emulsion interfaces**
- **Characterization of the adsorption behaviour of surfactants**

# Drop Shape Analysis System DSA30



The DSA30 is the solution for the users, who should flexibly react on measuring requirements. The indication of DSA30 is its comprehensive accessories and the possibility to automation.

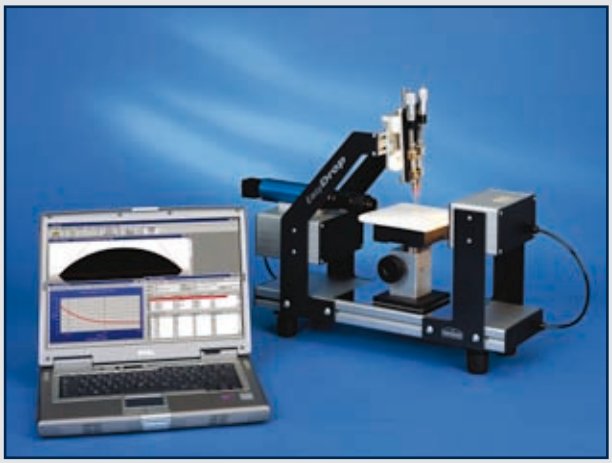
## FEATURES

- **From manual to fully automatic configurable**
- **Possibility of automatic dosing for several test liquids**
- **Manual or automatic axis**
- **From manual sample stage to fully automatic wafer table**
- **External software interface**

## APPLICATION

- **Quality control of surface treatments**
- **Investigation of Si-Wafer**
- **Fundamental research of various coatings**
- **Measurement of surface purity**

# Drop Shape Analysis System EasyDrop



EasyDrop is suitable for users, who have to measure contact angle, surface energy and surface tension of liquids occasionally. The contact angle measuring system EasyDrop has all components for the precise and computerized determination of contact angle.

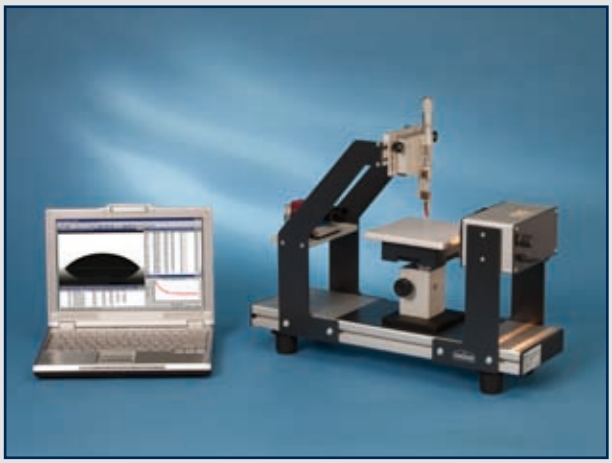
## FEATURES

- **Manual and automatic dosing**
- **For samples up to 300×∞×50 mm (L×W×H)**
- **Software for various evaluations**
- **Surface energy determination with practical double dosing system**

## APPLICATION

- **Quality control laboratory**
- **Ideal for training and education**
- **Checking the success of plasma treating**
- **Replace the usage of test ink**

# Drop Shape Analysis System DSA14



The DSA14 is the first-user model for software-supported contact angle measurements. In a favourably priced manually operated version, but without any compromises in quality, operating convenience and software, the contact angle measuring system DSA14 is a real alternative. An extensive range of accessories equips the basic instrument for demanding measuring tasks.

## FEATURES

- **Determination of contact angle and surface free energy**
- **Optional measurement of the surface and interfacial tension of liquids**
- **High image recording speed**
- **High-resolution camera**
- **New *Dose&Push* dosing system**

## APPLICATION

- **Ideal for education**
- **Where contact angles only have to be measured occasionally**
- **For simple measuring tasks**

# Mobile Contact Angle Measuring System MobileDrop

With GH11 the user can measure contact angle, surface energy on-site and network-independent. The GH11 can be used as an ideal quality control tool because of its extreme simple handling, portability and small size.

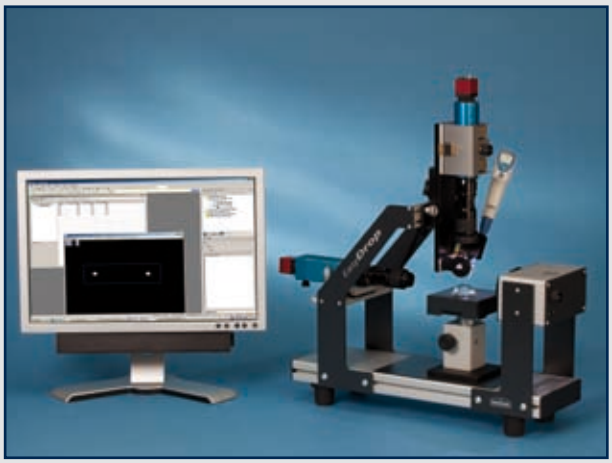
## FEATURES

- **Small, light, quick, mobile**
- **Contact angle measurement of virtually any size**
- **Contact angle and surface energy for quality control**
- **Simple handling**
- **Network-independent**

## APPLICATION

- **Quality control for manufacture of parts**
- **Glass, metal and ceramic surfaces**
- **Press cylinder and printing blankets**
- **Concrete and natural stone surfaces**
- **Various surface treatments**

# Top View Contact Angle Analyzer Module TVA100



The nondestructive contact angle measurement in recesses and on strongly curved surfaces in combination with the high measuring accuracy of very small contact angles make the TVA100 unique.
The patented top view distance method determines the curvature of the drop surface by measuring the distance between two spots of light from above.

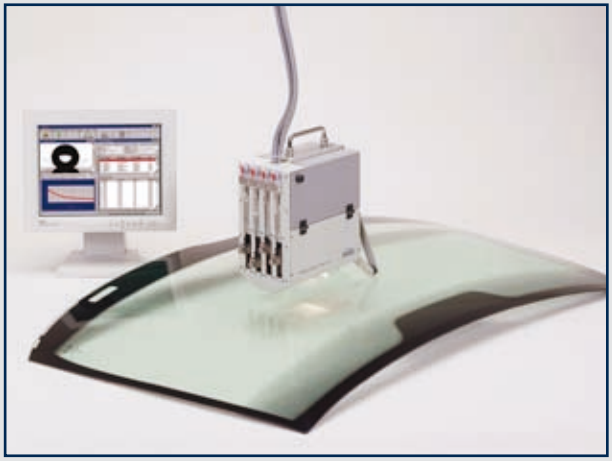
## FEATURES

- **Nondestructive contact angle measurement even on strongly curved surfaces**
- **Contact angle measurement in recesses**
- **High measuring accuracy, particularly for contact angles below 20°**
- **Also suitable for very large surfaces**
- **Very wide choice of measuring liquids**

## APPLICATION

- **Cleaning condition of silicon and glass surfaces**
- **Surface free energy on strongly curved surfaces**
- **Contact angle measurement in recesses such as in 96-well plates**
- **Measurements on PCBs between the electronic components**
- **Checking large optical assemblies such as lenses**

# Universal Surface Tester GH100



The Universal Surface Tester GH100 allows contact angles on large surfaces of any size to be measured. This is made possible by the innovative measuring optics arrangement that even permits the extensive characterization of very large samples. The measuring head can be used as a mobile unit, a laboratory instrument or together with a robot.

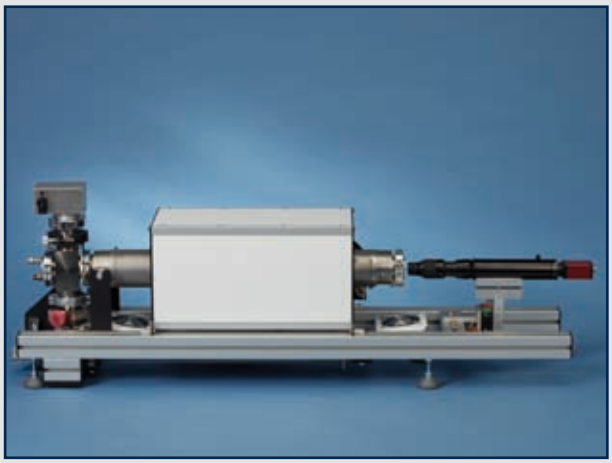
## FEATURES

- **Automatic dosing of several test liquids**
- **Dynamic and static contact angle measurement**
- **Measurement of the free surface energy of solids**
- **Automatic sample positioning system for process control**
- **Software-controlled motor-driven zoom and focus**

## APPLICATION

- **Metal, plastic and glass surfaces for automobiles**
- **Printing rolls and blankets**
- **Glass surfaces in production and finished products**
- **Ceramic and plastic sanitary objects**

# Drop Shape Analysis System with Tube Furnace DSAHT



The high temperature measuring places of DSAHT serial stands out with the simplest sample change, excellent contour analysis and user friendly operation. We use the modularity of the measuring system to meet the special requirements of various applications and temperature range.

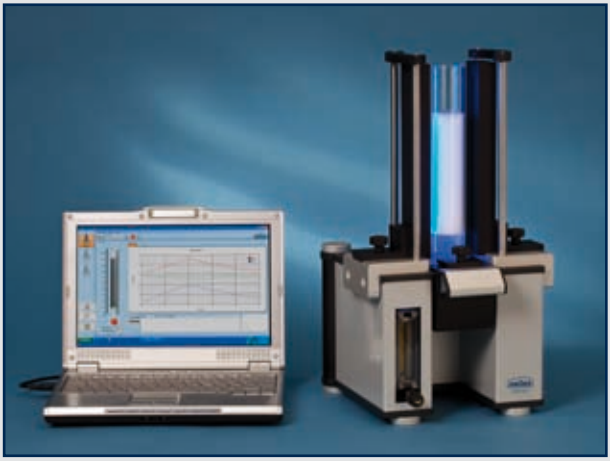
## FEATURES

- **Simplest feeding of the sample chamber**
- **Excellent contour clarity for the whole temperature range**
- **Measurement for oxidizing, reducing and inert gas atmosphere**
- **Exact determination of sample temperature though measurement on sample stage**

## APPLICATION

- **Development of metal alloys**
- **Sintering processes of ceramics**
- **Slag**
- **Glass melt**

# Dynamic Foam Analyzer DFA100



Whether necessary, or as an unwanted side-effect, foam plays an important role in many technical processes. The Dynamic Foam Analyzer DFA100 is a scientific instrument that determines a whole range of parameters which describe the formation, stability and breakdown of a wide range of different foams.

## FEATURES

- **Various modules for foam generation and characterization**
- **Sample changing in a few seconds**
- **Very easy to clean**
- **Contact-free, automatic foam height measurement**
- **Measurement of very instable foams is possible**
- **Plug-and-play operation thanks to USB architecture**

## APPLICATION

- **Cleaning agents and detergents**
- **Food**
- **Antifoamers / Defoamers**
- **Fire-fighting foam**
- **Flotation**
- **Surfactant development**

# Measuring Techniques - Liquids

## Static measurements

**Du Noüy Ring method**
The traditional method used to measure surface or interfacial tension. Wetting properties of the surface or interface have little influence on this measuring technique. Maximum pull exerted on the ring by the surface is measured.

**Wilhelmy Plate method**
A universal method especially suited to check surface tension over long time intervals. A vertical plate of known perimeter is attached to a balance, and the force due to wetting is measured.

**Spinning Drop method**
This technique is ideal for measuring low interfacial tensions. The diameter of a drop within a heavy phase is measured while both are rotated.

**Pendant Drop method**
Surface and interfacial tension can be measured by this technique, even at elevated temperatures and pressures. Geometry of a drop is analyzed optically.

## Dynamic measurements

**Bubble Pressure method**
A measurement technique for determining surface tension at short surface ages. Maximum pressure of each bubble is measured.

**Drop Volume method**
A method for determining interfacial tension as a function of interface age. Liquid of one density is pumped into a second liquid of a different density and time between drops produced is measured.

# Measuring Techniques - Solids

**Sessile Drop method**
This optical contact angle method is used to determine wetting properties of a localized region on a solid surface.

**Dynamic Wilhelmy method**
A method for calculating average advancing and receding contact angles on solids of uniform geometry.

**Single Fiber Wilhelmy method**
Dynamic Wilhelmy method applied to single fibers to measure advancing and receding contact angles.

**Powder Contact Angle method**
Enables measurement of average contact angle and sorption speed for powders and other porous materials. Change of weight as a function of time is measured.

**Top View Distance method**
Measurement of the contact angle from the top using the mirror image of light spots which are reflected by the curved surface of the drop.

# Measuring Techniques - Emulsions / Foams

## Stability of emulsions and foams

**Oscillating and Expanding Drop method**
The method of oscillating (ODM) and expanding (EDM) drop is used to measure the interfacial rheological properties.

## Foam generation and avoidance

**Measurement of foamability and stability**
The generation and breakdown of various foams can be described by using scientific parameters.

# Where to find us

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