INFORMATION

SITE100

Spinning Drop Tensiometer
The KRÜSS Interface Tester

When it comes to lowest interfacial tensions... SITE100

- **Characterization of interfacial tensions from 10^{-6} to 50 mN/m**
- **Integrated video camera for easy, fast and precise data analysis**
- **Integrated temperature measurement**
- **Precise camera alignment stage and high quality LED illumination for optimal images**
- **Two low-distortion lenses integrated**
- **Ergonomic software design**
- **Up to 15000 rpm (SITE100HS: optional 20000 rpm)**
- **Wide range of accessories**
- **Time-proven capillary technology**

THE INSTRUMENT FOR INTERFACIAL RESEARCH

The Instrument

The instrument consists of the mechanical unit with capillary, motor, LED illumination and CCD camera and an electronic module. This contains power supply, controller and temperature display.

The electronics unit is connected via RS232 interface and video interface (frame grabber) to a PC. The PC controls the rotational speed, performs the measurements stores the data.

Interfacial Tension

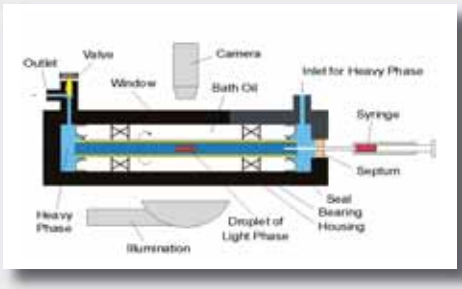
When two immiscible liquids, such as oil and water, come into contact, a boundary forms between them.

Interfacial tension measures how much work is needed to increase area of this interface. Oil and water can be mixed by stabilizing droplets of oil in water by adding surfactants and co-surfactants, to avoid coalescence of oil droplets. This forms an oil in water emulsion.

The processes of removing grease from hard surfaces using a household cleaner or petroleum from underground rock formations using tertiary oil recovery techniques also rely on lowering interfacial tension between oil and water containing surfactants. The lower the interfacial tension, the higher the efficiency of removal.

Spinning Drop Method

The spinning drop method has been developed to measure interfacial tensions as low as 0.000001 mN/m! The measurement principle is based on the fact that the gravitational acceleration has little effect on the shape of a droplet rotating at sufficient speed around its longitudinal axis.



A droplet located along the axis of a rotating capillary filled with denser fluid will form a cylindrical shape. With the appropriate drop volume and rotational speed, the drop diameter depends solely on the interfacial tension. The droplet stabilises in the axis of rotation, while the surrounding fluid is forced outward owing to its higher density.

The Software

The device is controlled by the powerful KRÜSS DSA2 software that is also used for image acquisition, analysis software and evaluation.

The DSA2 controls the rotational speed of the capillary and determines the diameter of the rotating droplet in realtime.

It allows manual as well as automatic time dependant measurements to observe the formation of an equilibrium even for long lasting processes. The image analysis software can easily adapted to different requirements.

The data are displayed in numbers and in freely configurable diagrams. A report module allows the automatic creation of measurement reports.

The data are stored in a database format which can be retrieved easily by various programs.

TECHNICAL DATA

Measuring range:	10^{-6} - 50 mN/m
Rotation speed:	up to 15000 rpm
	optional 20000 rpm (SITE100HS)
Capillary diameter:	3.5 mm
Temperature range:	0 to 100°C
Measuring axis:	2
Magnifications:	2
Dimension:	30x45x30 cm
Weight:	15 kg
Power supply:	100 to 240 V

AVAILABLE UNITS / ACCESSORIES

- **Second Microscope Stage**
- **Small Volume Accessory**

Technical specifications are subject to change without notice

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