

## Technical data

Interfacial tension measuring range:	• $1 \cdot 10^{-6}$ ... $2 \cdot 10^3$ mN/m
Speed range:	• 0 ... 20 000 rpm
Speed resolution:	• $\pm 0.001$ rpm
Speed long term stability:	• $\pm 0.5$ rpm
Maximum speed step (relaxational test):	• $\pm 2000$ rpm/s
Speed oscillation frequency:	• 0.01 ... 200 Hz at a minimum speed of 3000 rpm
Tilt angle of capillary block:	• $\pm 10^\circ$ , resolution $\pm 0.0023^\circ$
Optics:	<ul style="list-style-type: none"> <li>• 6-fold zoom lens (0.7 ... 4.5 magnification) with integrated continuous fine focus (<math>\pm 6</math> mm) and high light transmitting capacity</li> <li>• CCD camera with a resolution of max. 768 x 576 pixels</li> <li>• FOV 1.9 x 1.412.1 x 9.1 mm</li> <li>• Image distortion &lt; 0.05%</li> </ul>
Image processing system:	<ul style="list-style-type: none"> <li>• High-performance image processing system with 132 MB/s data transfer rate (compatible with Euronorm CCIR and US standard RS-170)</li> <li>• 50 images per second digitizing speed</li> </ul>
Measuring methods:	<ul style="list-style-type: none"> <li>• Spinning Drop Method</li> <li>• Oscillating Spinning Drop Method</li> </ul>
Diameter of capillary:	• outer 6.25 mm, inner 2.45 mm
Temperature control options:	<ul style="list-style-type: none"> <li>• Liquid temperature controlled capillary block for 10 ... 80 °C</li> <li>• Peltier temperature controlled capillary block for -10 ... 130 °C</li> </ul>
Temperature measurement:	<ul style="list-style-type: none"> <li>• Integrated temperature measurement and digital display for -60 ... 450 °C</li> <li>• 2 x Pt 100 inputs</li> </ul>
Dimensions (L x W x H):	<ul style="list-style-type: none"> <li>• SVT 20N base unit: 420 x 290 x 370 mm</li> <li>• Power supply unit: 300 x 120 x 210 mm</li> </ul>
Weight:	<ul style="list-style-type: none"> <li>• SVT 20N base unit: 25 kg</li> <li>• Power supply unit: 10 kg</li> </ul>
Power supply:	• 100...240 VAC; 50...60 Hz; 450 VA
Alternative/supplementary units and accessories:	<ul style="list-style-type: none"> <li>• Fast exchangeable capillary sets</li> <li>• Peltier temperature controlled capillary block</li> <li>• Precision dosing systems</li> <li>• PC-systems, refrigerated/heating circulators</li> </ul>

**For more information about a tailor made solution to your surface chemistry requirements, please contact us. We will be pleased to provide a quotation, obligation free, for your instrument system.**



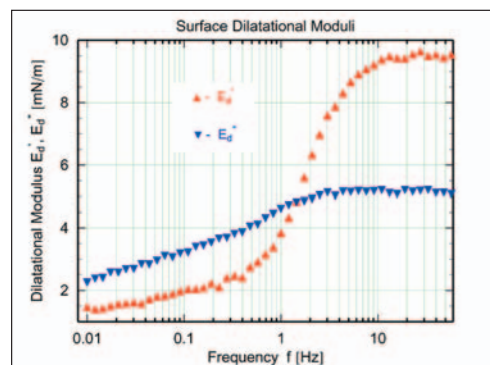
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## SVT 20N Spinning Drop Video Tensiometer







Surface dilatational modulus measured at different frequencies

### The measurement of low interfacial tension

The spinning drop video tensiometer SVT 20N is a special-purpose optical instrument for measuring high to extremely low interfacial tensions. The software is designed for ease of use and fast access to all control elements. Combined with the software packages SVTS 20 IFT and SVTS 21 Oscillation for Windows®, the SVT 20N provides the following functions:

- measurement of static, time-, and temperature-dependent interfacial tensions and dilatational elasticities between two not completely miscible liquids
- automatic movement of the electronically controlled tilting base for positioning the spinning drops along the optical axis of the instrument
- measurement of 2D and 3D extensional relaxation of viscoelastic liquids and



Spinning drop tensiometer SVT 20N



SVT 20N capillary with spinning drops

liquid drops encapsulated or enclosed in membranes at varying speeds of rotation

- determination of yield stresses on liquid-crystalline and pasty substances
- calculation of dispersive and polar contributions of liquids based on measured surface and interfacial tensions with error limits

### Components and accessories

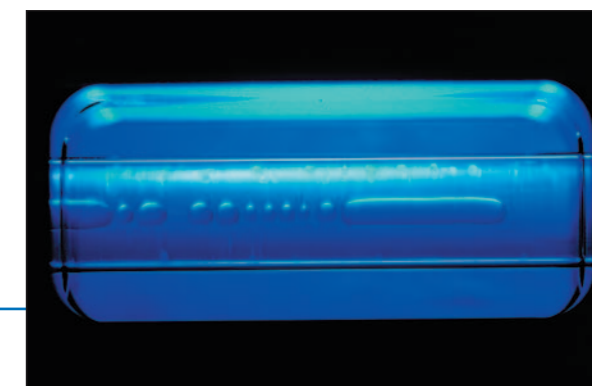
- high-performance 6-fold power zoom lens with an integrated continuous fine focus and adjustable observation angle
- video-based measuring system with high-resolution CCD camera and high-performance digitizing adapter (max. 768 x 576 pixels)
- precision capillary system with electronically commutated DC drive
- electronic tilting base for the capillary block, software-controlled motor-

driven position and tilt adjustments

- software-controlled speed of rotation
- adjustable LED steady illumination with triggered video system
- integrated graphics display with touch panel functions for direct control of the device
- fast exchangeable capillaries with inner diameter of 2.45 mm made of borosilicate glass
- liquid temperature control of the capillary block for the temperature setting from 10 to 80 °C
- optional peltier capillary block with peltier elements for fast and easy software control of the temperature from -10 to 130 °C

### Software for efficient work

The software, developed for Windows®, features simple and intuitive usability and control of all hardware components.



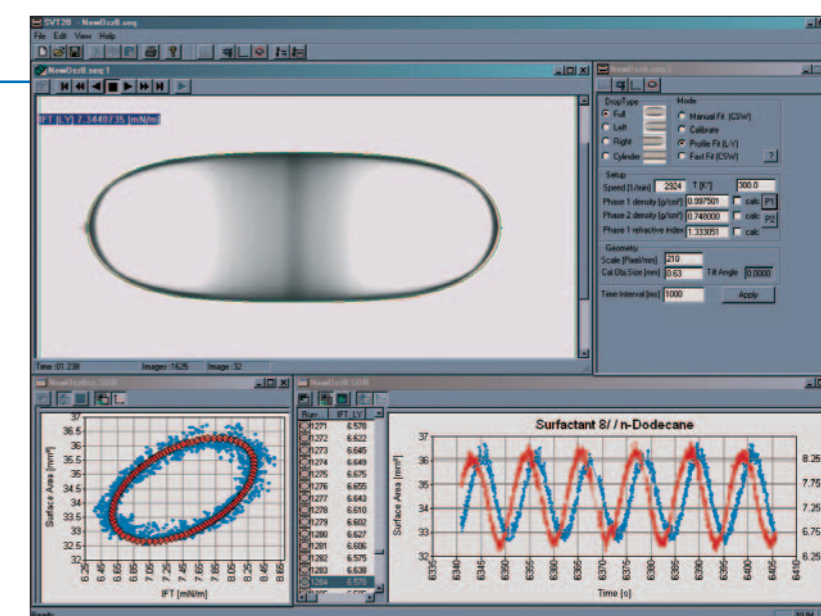
Spinning drops in SVT 20N capillary

The software is available in various configurations providing the following functions:

- time-dependent control of the rotational speed, the inclination of the tilting base with the measuring cell, the temperature (optional with peltier capillary block), and the camera position for fully automatic observing of the drops
- recording and evaluation of video sequences for analysing fast relaxational oscillations and elongations of drops
- calculation of interfacial tensions based on spinning drop contours according to various methods including the Young-Laplace method
- determination of dilatational interfacial elasticity, yield points, and other rheological and rheo-optical parameters of viscoelastic and viscoplastic materials
- automatic compensation of temperature dependent changes of liquid den-

sities and refractive indices in the light and ambient phase

- conversion of recorded video sequences to AVI and MPEG formats
- statistical evaluations and error analysis (SPC) with averaging, standard deviation, histograms, etc.
- liquids and solids database



Software modules SVTS 20 and SVTS 21 measurement of interfacial dilatational elasticity