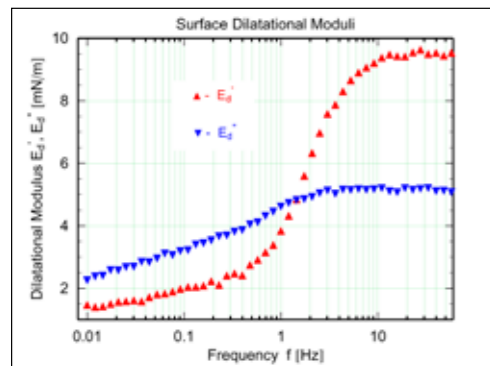


**ODG 20P**  
Oscillating Drop Generator  
with pressure sensor





Surface dilatational modulus measured by a frequency sweep

## Interfacial rheology

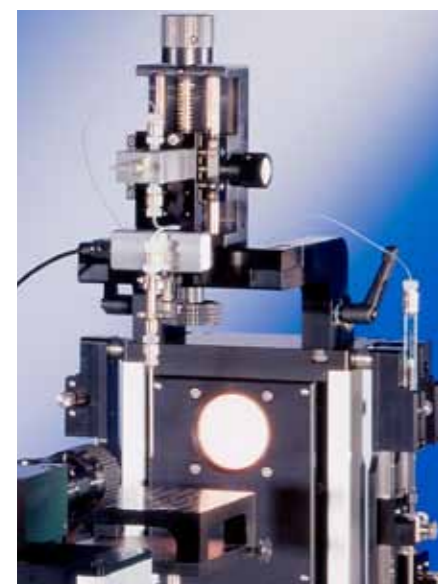
Measurements of surface elasticities and relaxational studies, at phase boundaries, have been of interest to surface chemists for more than thirty years.

Since the publication of the classical works by *Lucassen and van den Tempel* the number of scientific publications in this field have grown constantly and interesting applications have been described in foam stability and the behavior of biomolecules at phase boundaries. To address these applications, DataPhysics has developed the ODG 20P oscillating drop generator for determining the interfacial rheological properties.

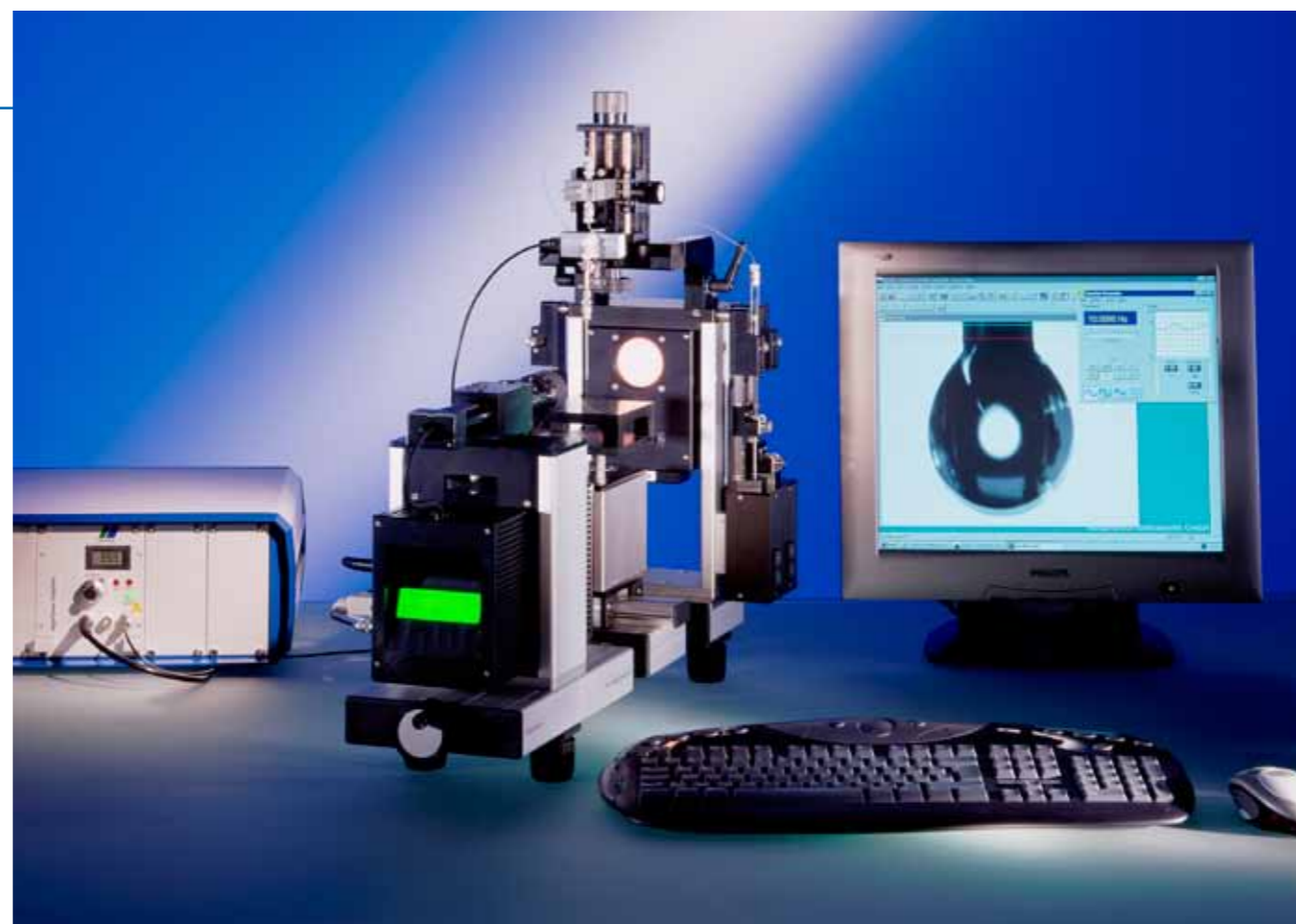
This extension to the optical contact angle measuring and drop contour analysis systems of the OCA series – based on a piezoelectric transducer – excites oscillating drops with a wide range of fre-

quencies and amplitudes. Periodic variations in the drop volume, or alternatively in the drop shape, with constant volume, can be performed. In addition, the drop surface area can be kept constant while the drop volume is varied.

The excitation frequency ranges up to 50 Hz, depending on the density and viscosity of the fluid. The amplitude of the, axis-symmetric, oscillations varies from just a few micrometers to millimeters.



Oscillating drop actuator ODG 20P with dosing unit for longitudinal oscillations



OCA 30 with oscillating drop generator ODG 20P

## Trend-setting measurements

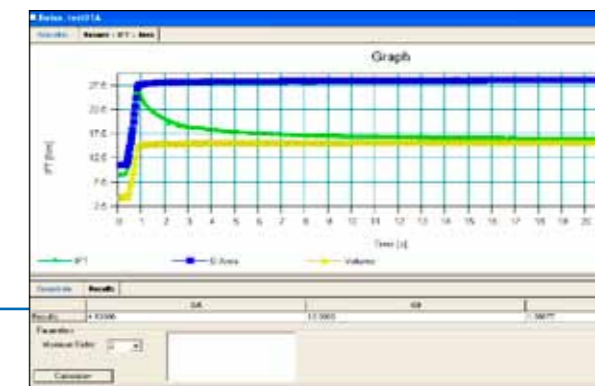
The ODG 20P offers the following measurement modes:

- Constant volume mode with axis-symmetric drop shape oscillations
- Harmonic volume mode with the following wave forms: sinusoidal, saw tooth, rectangular, triangular, or arbitrary waveforms
- Relaxational mode following the instant increase/decrease of the drop volume

Oscillating drops can be analyzed by conventional drop contour analysis or by the new approach of pressure measurement with a high-performance pressure sensor.

## Technical highlights

- High-performance piezoelectric actuator with built-in pressure sensor.
- Software controlled amplifier for pre-defined (sinusoidal, saw tooth, rectangular, triangular or arbitrary) waveforms
- Optional high-speed image processing system UpHSC 1000 with up to 1600 images / second, alternatively UpHSC 2000 with up to 2200 images / second
- High-precision software controlled dosing systems



Software module SCA 26 Analysis of relaxational effects of an expanded drop

## Software for efficient work

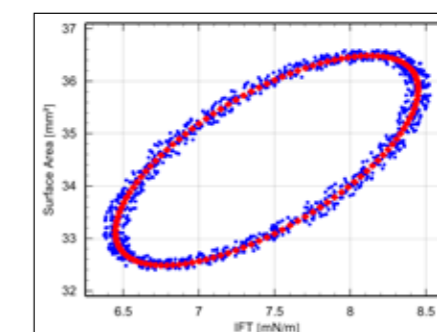
The software module SCA 26 developed for Windows XP® features all measuring methods known in interfacial rheology analysis. It also features simple and intuitive usability and control of all hardware components.

The calculation, analysis and presentation of the real and imaginary part of the interfacial dilatational modulus could be obtained by oscillational and relaxational studies.

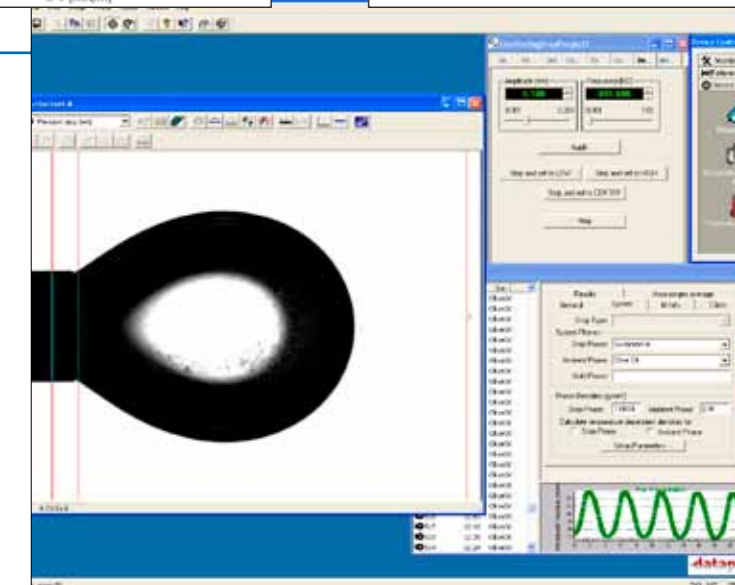
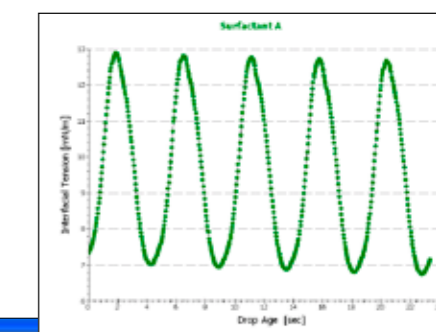
The results can be derived from liquid/gas or liquid/liquid systems.

Intuitively programmable sequences allow the automatic analysis and presentation of frequency and amplitude sweeps without user interaction.

Surface area vs. Interfacial tension



Oscillating Interfacial tension



Software modules SCA 20 and SCA 26 Measurement and analysis of oscillating drops

## Technical data

Constant volume (area) mode:	• 0 ... 600 µm axis-symmetric drop shape oscillations
Harmonic volume (area) mode:	• 0 ... 20 µl
Relaxational mode (expanding drop method):	• 0 ... 20 µl
Programmable wave forms:	<ul style="list-style-type: none"> <li>• sinusoidal wave (for drop oscillations)</li> <li>• step function (for drop relaxations)</li> <li>• saw tooth</li> <li>• triangular</li> <li>• arbitrary wave</li> </ul>
Viscosity range:	• up to 50 mPas
Dynamic interfacial tension measuring range:	• 0.05 ... 2000 mN/m
Frequency range:	• 0 ... 50 Hz
Pressure resolution:	• ± 0.25 Pa
Limit frequency of the pressure sensor:	• 10 kHz
Data analysis rate of the pressure sensor:	• up to 2 kHz
Dimensions (L x W x H):	<ul style="list-style-type: none"> <li>• ODG 20P Actuator: 210 x 140 x 240 mm</li> <li>• ODG 20P Amplifier: 350 x 360 x 150 mm</li> </ul>
Weight:	<ul style="list-style-type: none"> <li>• ODG 20P Actuator: 2 kg</li> <li>• ODG 20P Amplifier: 8.7 kg</li> </ul>
Power supply:	• 100...240 VAC; 50...60 Hz; 350 VA

### The 'modular' design Philosophy

The ODG 20P illustrates the proven OCA design philosophy. It enables the interfacial measurement, by an unique measurement device, of viscoelastic properties (e.g. real and imaginary part of the interfacial dilatational modulus) of liquid/gas or liquid/liquid interfaces in several different excitation modes, independantly controllable for drop volume or drop area.

This is possible by the software control of a piezoelectric device, which generates oscillating and relaxing liquid drops.

For a solution to your specific application the modular design of the OCA family, developed in cooperation with our customers, provides a multitude of system configurations, which guarante a comfortable and effective solution.

**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.**

**Your sales partner:**