Intuition at first glance

ADVANCE Software
INTUITION AT FIRST GLANCE

- Universal software platform for surface science
- Intuitive approach of solving even the most complex tasks
- Interface for embedding ADVANCE in information systems

ADVANCE, our innovative software for interfacial chemistry, sets new standards in intuitive operability. All functions relevant for a working step are arranged in tiles that display everything required. By avoiding menus and pop-ups, ADVANCE eliminates unnecessary clicks and time-consuming searches for hidden elements. With this maximum clarity, ADVANCE makes complex measurements for research as easy as standardized quality tests.

A wide range of instruments and automated methods
ADVANCE is the perfect match for our instruments in wettability analysis, surface and interfacial tension measurement, and foam analysis. All software modules have a powerful tool for creating automated procedures that incorporate the manifold electronic instrument components and include automated data processing for calculating final results as well as exporting the data. Carrying out analysis based on templates which use these automations ensures repeatability and reduces measurement failures caused by operating errors to a minimum.

Prepared for Lab 4.0
Thinking outside the box, ADVANCE was designed with an interface (API) to communicate with other software. The API makes it possible to expand the functionality of ADVANCE automation programs far beyond individual sample analyses. Fully automated measurements and data export can easily be incorporated in Laboratory Information Management Systems (LIMS) or other integrated processes.
THE ADVANCE PRINCIPLE

THE SAME FOUR STEPS, NO MATTER WHICH INSTRUMENT YOU EMPLOY

How can we talk about ADVANCE being intuitive without knowing everybody’s intuition? The answer is that we created an operating concept that follows a universal four-step workflow on which every scientific measurement is based in principle. The software’s tile arrangement mirrors this workflow organically, always presenting the required functions according to the current step.

**Step 1: Preparing the measurement**
The process starts with editing information on the sample as well as setting parameters. Automated procedures make it possible to create measurements for even the most complex tasks in order to carry out analyses without user interference. To make this step simple we have prepared measurement templates which are easily adaptable but can also be used as they are in most cases.

**Step 2: Performing the measurement**
ADVANCE starts interacting with the instrument in order to carry out the measurement. Depending on the degree of automation, ADVANCE takes complete control. During the measurement, displayed raw data and video images, if applicable, make it easy to monitor the measurement in live view.

**Step 3: Reviewing results**
The measurement is finished. ADVANCE shows all measured data in clearly arranged tables and charts. Data charts, lists, and also displayed video images or other kinds of presentation that are part of the respective method are synchronized to make tracing back results to raw data quick and easy.

**Step 4: Evaluating, comparing, and exporting results**
Finally, ADVANCE uses scientific models to calculate conclusive results from raw data. With a few clicks, comprehensive reports or export files are created for further processing or archiving. To gain maximum information from your results, multiple measurements can be compared at will with just a few clicks.
ADVANCE | DROP SHAPE

COMPREHENSIVE SOLUTIONS FOR CONTACT ANGLE MEASUREMENT

- Fully automated wettability analysis of solids
- Sophisticated image evaluation for accurate results
- Wide range of fitting methods and scientific models

ADVANCE uses the versatility of our contact angle instruments to extract a vast amount of information from the shape of liquid drops. With a few intuitive steps you can prepare software-controlled wettability analyses utilizing every degree of automatization up to position mapping of the surface free energy (SFE) and tilting experiments. Using our Liquid Needle dosing technique, ADVANCE even determines the SFE in just one second.

Supreme fitting algorithm for drop shape analysis
When it comes to analyzing drop images, one of the main benefits of working with ADVANCE lies in its very robust fitting algorithm. The software is capable of detecting the drop shape and the boundary between drop and solid material (baseline) even in the face of severe interference, which can be caused by extraneous light or shadows, for example. And with the innovative background recording feature, no moment of your experiment is ever lost.

Matching the demands of scientific surface analysis
Drops on a solid can be flat or round, symmetric or asymmetric. Surfaces can be rough or smooth, chemically homogeneous or inhomogeneous, and they can show a low or high SFE, which may stem from different kinds of interaction. To give precise answers in each of these cases, ADVANCE comes with a large variety of fitting methods for shape analysis and with all of the important models for calculating the SFE. Accurate measurement of the surface and interfacial tension of liquids add the final piece for an overall, scientific image of your wetting process.

Simultaneous analysis of drops of two liquids as part of a One-Click SFE measurement
ADVANCE | TENSIOMETERS

COMBINING EASE OF USE WITH PRECISE SURFACE AND INTERFACIAL TENSION MEASUREMENT

- Variety of methods for surface science and more
- Manual operations reduced to a minimum
- Quick and easy access to results and their raw data

Whether you want to analyze surfactants scientifically, test their use in an industrial application or carry out measurements by a standard: Your KRÜSS tensiometer and ADVANCE make the perfect couple. The software communicates with the manifold elements and sensors of our instruments so that automated measurements are carried out reliably, reducing the necessary manual operations to a minimum.

All-round method portfolio for surface chemistry and beyond

ADVANCE supports a vast number of methods, each with its own field of application. Among them are fully automated determinations of the critical micelle concentration (CMC), but also techniques that cross the limits of classic tensiometry, such as measuring contact angle, density or sedimentation speed. For the range of ultra-low interfacial tension as required in enhanced oil recovery (EOR), ADVANCE uses powerful image analysis for the spinning drop method.

Clear and GLP-conformed measurement documentation

All raw data and intermediate results of your measurement as well as further evaluations are stored in a clear data structure and are easily accessible. This includes opening the image of a spinning drop with one click on the related result. With the standardization of measurement procedures and parameters as well as the gapless traceability of results to raw data, ADVANCE optimizes repeatability and follows GLP standards.

Concentration-dependent surface tension results in a fully automated CMC measurement
ADVANCE | FOAM ANALYSIS

ANALYZING EVERY ASPECT OF FOAM BEHAVIOR

- High repeatability thanks to standardized measurements
- Covers foam formation, stability, structure, liquid content
- Supports Ross-Miles and high pressure foam analysis

Describing foam scientifically places high demands on repeatability and the performance of data evaluation. ADVANCE uses standardized measuring conditions and records a vast amount of reliable data to simultaneously analyze different foam properties such as foamability, foam stability, liquid content, and foam structure.

Three simultaneous analyses carried out in one measurement

For optical analysis of foamability and foam stability, ADVANCE comes with a robust algorithm which precisely captures foam height with a resolution of 1 mm and a data rate high enough to analyze even the decay of very instable foam. The same data speed applies to the analysis of foam structure, where each video frame is evaluated with respect to absolute bubble sizes and their statistical distribution. Liquid content measurement at seven height levels delivers an accurate picture of drainage dynamics. Despite this huge pile of information in just one measurement, you will always keep an overview thanks to clear, synchronized data presentation.

Supporting different instruments for special applications

In addition to the most versatile instrument for examining foam, the Dynamic Foam Analyzer — DFA100, ADVANCE perfectly supports measurements according to ASTM D 1173 with our Ross Miles Foam Analyzer — RMFA. Simultaneous analysis of time-dependent foam height and structure is possible even at oil reservoir conditions with our High Pressure Foam Analyzer — HPFA.

Foam bubble structure and distribution of absolute bubble sizes
ADVANCE | SOFTWARE ASSURANCE

BENEFIT FROM OUR CONTINUING DEVELOPMENT

- Regular upgrades with new features for at least three years
- Easy to install with full compatibility through all versions
- Advantageous alternative to an instant license purchase

The time for acquiring anything high-tech never seems to be right: One doesn’t want to miss the next innovation step which is always imminent. ADVANCE is no exception to this rule. With at least one and usually two annual releases we continuously extend the range of functions with new powerful features. With regular upgrades in the framework of the ADVANCE Software Assurance you will never miss a new development and always work with the latest version.

The safe and simple way of staying up-to-date

Upgrading ADVANCE is as easy as the software itself. With no uninstallation necessary, the new version is operational within minutes. Each upgrade is compatible with any results you have collected. In many cases previous raw data can even be reanalyzed with improved algorithms or evaluated with new methods.

Two opportunities, one best choice

The ADVANCE Software Assurance contract has a minimum term of three years. We electively offer it as an alternative to an instant purchase. We consider it advantageous because the annual fee for the first three years is exactly one third of the price for an instant purchase, which comes without upgrades. When canceling the contract, you can still use ADVANCE for an unlimited time, you just don’t receive any more upgrades. In spite of the benefits of the Software Assurance, we still offer the instant purchase option for customers who cannot or do not want to enter a time-based contract.

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*There will be no adaptations of the fee in the first 3 years. After 3 years the fee will be adapted to one third of the price for an instant purchase according to our annually updated price list.
ALWAYS CLOSE TO YOU

At KRÜSS, we combine technical know-how and scientific expertise with plenty of passion. That is why we not only produce high-quality measuring instruments for surface and interfacial chemistry – we offer a unique combination of product and scientific consulting. Our continuous know-how transfer ensures that not only we at KRÜSS keep pace with scientific developments, but also our customers.

In this way, we help you to optimize and make better use of your technologies. This has made us the global market leader in the field of surface and interfacial tension measurement. As a matter of course, we will gladly support you with further information as well. Feel free to ask us about publications, application cases, and helpful information about other KRÜSS products. We are always close to you.

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