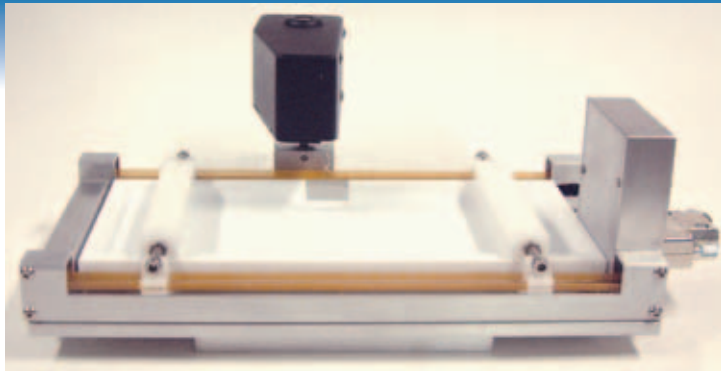




Excellence in Surface Chemistry

KSV MiniMicro LB System

This miniaturized Langmuir/Langmuir-Blodgett trough is the result of intensive cooperation with the world's top thin- and Langmuir-film research institutes. New potential nanotechnology innovations in electronics, material science and biology as well as in advanced basic research in physics and chemistry set high standards for research tools. KSV's MiniMicro utilizes the latest innovations in electronic microbalance technology and manufacturing of precision mechanics.

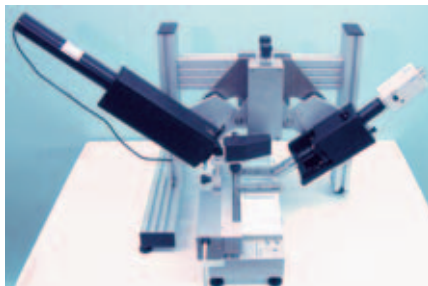


Trough sizes and volumes

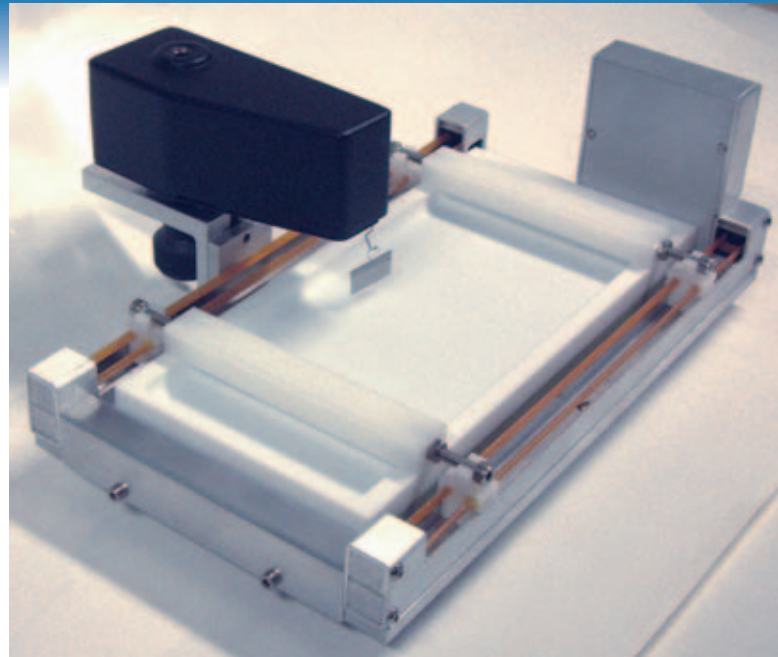
Two standard trough sizes are available.
Trough A – 170 cm² surface area 85 ml subphase volume
Trough B – 100 cm² surface area 50 ml subphase volume
Optional dipping well – volume increase 7,5 ml
Tailor-made troughs with very low volume/size/shape are made to customer specifications

Compatible with thin film characterization systems

The small size of the MiniMicro makes it easy to mount on the stage of a microscope, x-ray diffraction and neutron scattering equipment, ellipsometer, Brewster angle microscope, IR spectrophotometer systems, Fluorescence microscope, UV-VIS etc.

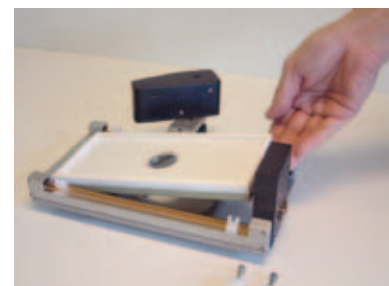
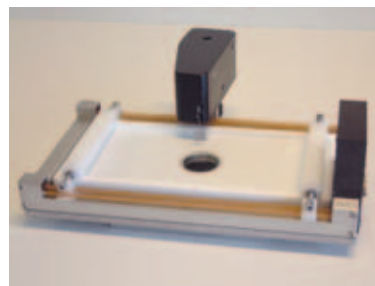


KSV's Brewster Angle Microscope



Transportable and easy to set up

Because of its small physical size – 145 x 280 mm – and light weight – only 950 g – the MiniMicro could fit into a standard brief case for easy and safe transportation, and you are up and running in less than 5 minutes! Powerful and intuitive software, featuring point and click drop down menus, buttons and icons can be quickly and easily mastered.



Removable troughs are thermostatable for control of subphase temperature.





Excellence in Surface Chemistry



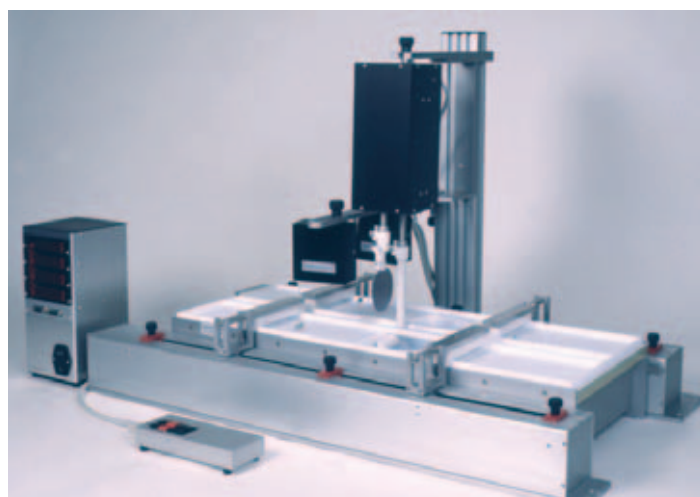
Save money with minimized trough volumes

In development of new pharmaceutical molecules as well as in many biological applications the monolayer forming molecular materials or the

subphase liquid can be very expensive. The smaller the subphase volume and surface area, the less material is needed.

The best size/performance ratio

The MiniMicro has the performance and the experimental capability of a full size Langmuir trough system – only the size is smaller. It is an affordable choice for all users from education to high end R&D.



A full size KSV alternating LB-film system for deposition of 6" wafers.

High quality materials

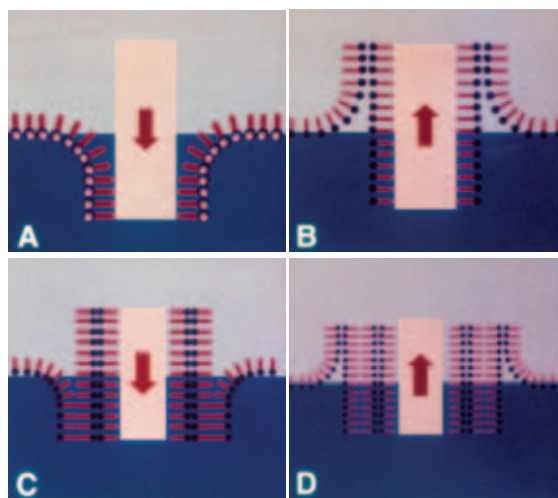
KSV uses only pure, non porous, form sintered solid PTFE in all troughs. No glue or pressure sealing is used in construction, minimizing the risk of contamination. Troughs

made of different material combinations are generally not recommended because of their sensitivity to cleaning solvents, different temperature expansions coefficients of materials and fragile construction. MiniMicro's removable one piece PTFE troughs with bottom plate heating/cooling of the subphase, leak proof barriers and symmetric film compression ensures measurement reliability, cleanliness and robustness.

PC controlled LB-film deposition

Deposition of LB-films on solid substrates is fully automatic and software controlled.

Since the substrate dipping is performed at the center of the film compression, where the monolayer is uniformly oriented, the molecular orientation will not alter during the transfer from air/water interface onto a substrate.

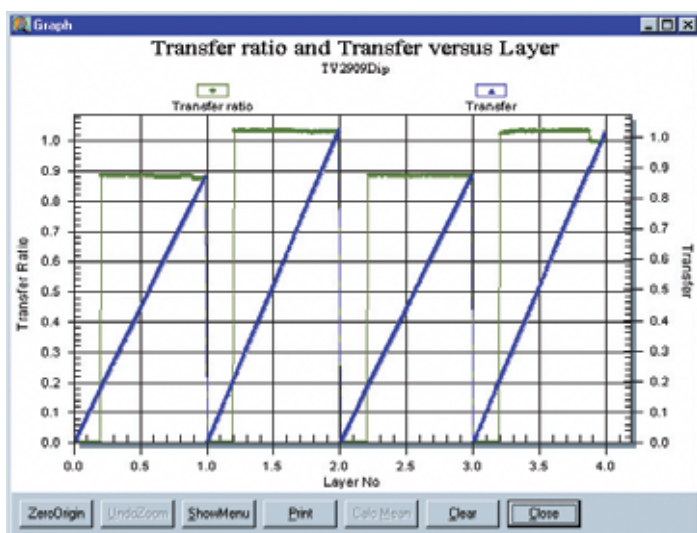
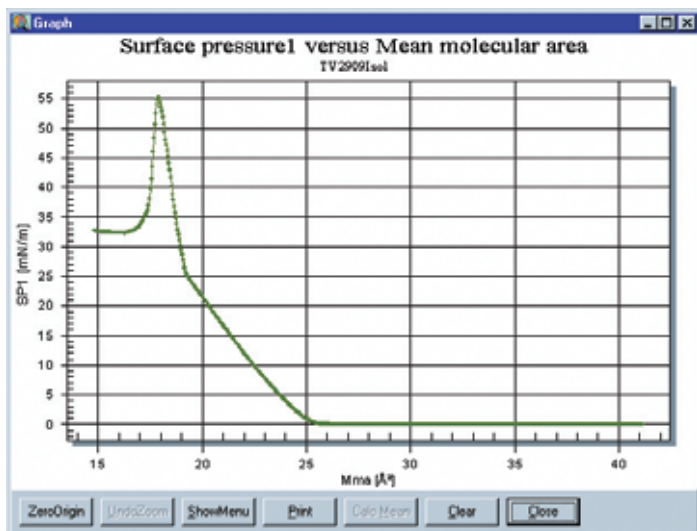


Deposition of Langmuir-Blodgett films on a hydrophobic substrate.

Full size software

Regardless of its small size, the MiniMicro runs with a full size software package. The KSV MiniMicro trough is run by a powerful 32-bit software for Windows™. Using the software is easy due to the familiar point and click format of drop down menus, buttons and icons. The software allows the user to perform a variety of pre-programmed experiments covering most known Langmuir-film measurements. The programs can be further modified to suit special needs. The data is stored in a database and can be retrieved, analyzed or exported to other data reduction software.





Standard programs include:

- Compression/relaxation isotherms: surface pressure/mma, surface pressure/time, or surface pressure/any desired measurable parameter
- Transfer ratio and deposition profiles
- Analysis of monolayer kinetics (enzyme kinetics, monolayer hydrolysis, polymerization etc.)
- Analysis of monolayer penetration, solubility and binding of biomolecules (enzymes, proteins, peptides etc.)
- Isochores and isobars: constant increase/decrease of surface pressure/mma, surface pressure/time, or surface pressure/any desired measurable parameter

Four basic versions

MiniMicro 1

A basic Langmuir-film balance designed for conventional monolayer analysis when small amounts of material or small subphase volumes are used – typically biological applications.

MiniMicro 2

Sophisticated Langmuir-Blodgett instrument for unsupervised deposition of multiple monolayers on solid substrates. DC motor driven smooth deposition device and symmetric compression of the monolayer ensure the highest uniformity of molecular orientation during the deposition.

MiniMicro 3

Microscopic analysis of monolayers are conveniently performed with the MiniMicro 3. A sapphire base window and easily customized mechanics allow the trough to be fitted in most Microscopes.

MiniMicro 4/Tensiometer

By use of KSV's Wilhelmy rod method it is possible to use MiniMicro as a tensiometer to measure surface tension and CMC in micro well plates. This special technique allows use of extremely small liquid volumes – less than 300 microlitres.

Customized Troughs

All the above basic trough versions are available in trough sizes A and B or can be manufactured to user specifications.

Specifications

Film Balance	dynamic range 0 to 250 mN/m resolution 0.4 N/m
Dipper	speed 0.1 to 75 mm/min max. substrate size 25x30 mm
Compression speed	0.02 to 200 mm/min

The Company

KSV Instruments Ltd is a leading global provider of routine, research and characterization instruments for surface chemistry and Langmuir-Blodgett film applications. Our headquarters are in Helsinki, Finland and we have offices in North America and Sweden and trained representatives throughout the world.

Interfacial Characterization

With Sigma tensiometers and CAM Drop Shape Analysis contact angle meters and their various modifications KSV covers most of the known interfacial measurement techniques.

All instruments utilize the latest technological advances in measurement of surface/ interfacial tension of liquids as well as contact angles and surface free energies.

Langmuir film Preparation and Characterization

Ranging from manual, educational instruments to fully equipped high performance R&D grade multi/alternating layer LB-troughs KSV offers the widest range of Langmuir systems in the world. KSV's BAM (Brewster Angle Microscope) and ISR (Interfacial Stress Rheometer) are used for characterization of Langmuir and LB films in a wide variety of nanotechnology, biology and molecular engineering applications.

Dip Coating

A wide variety of dip-coaters for exacting applications, from single manual dippers to automatic multiple dipping devices.

Process Control

KSV makes a range of at-line (AL) and on-line (OL) process control tools for monitoring surface tension, temperature, pH, viscosity and conductivity. An option also exists for automatic dosing of surfactants.



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