

KSV SPOT

Surface Potential Meter

Main Features

KSV SPOT is a compact and highly sensitive stand-alone surface potential meter specifically designed for nanoscale film characterization and molecular interaction studies.

KSV SPOT is based on the non-contact and non-destructive vibrating plate capacitor method. Features include very good accuracy and reproducibility while maintaining minimal drift, making KSV SPOT the ideal equipment for study of monolayers at the air/water interface.

Surface potential measurements obtained with KSV SPOT can be recorded and analysed with the *KSV LayerBuilder* software.

Applications

KSV SPOT enables you to complement your surface pressure - area isotherm data with the most sensitive available surface potential data allowing determination of:

- Composition of monolayers
- Molecular orientation
- Interaction & adsorption at the interface
- Dissociation degree

Surface potential measurement examples are provided on the back page:

- > Stearic acid monolayer surface potential on deionized water.
- > Stearic acid monolayer surface potential on CdCl₂ subphase.

Reduced Start-up Time

KSV SPOT is factory-calibrated. Just plug it into the *KSV LayerBuilder* interface unit to start measuring, no other setup is required.

The surface potential meter is automatically recognized by *KSV LayerBuilder* software, allowing you to quickly generate data.

In addition, KSV SPOT is delivered with a flexible stand allowing rapid and easy integration to your trough.



KSV SPOT can be easily integrated to a trough thanks to its flexible stand.



Specifications

Dynamic range: -5 to +5 V
Reproducibility: ± 2 mV
Drift: ± 2 mV/h
Height dependency: 10 mV/mm
Probe diameter: 16 mm
Sensitivity: 1 mV
Response time: 2 seconds
Sensor head dimensions: 100 x 20 x 85 mm³
Height adjustment: ± 200 mm



Example Measurement

Figure 1 and 2 show surface pressure - area isotherms of stearic acid and the corresponding surface potential data measured with KSV SPOT.

A monolayer of Stearic acid was spread on a subphase (KSV Minitrough System 2). For the first experiment, the subphase was deionized water (pH=5.6) whereas a solution of Cadmium Chloride ($[c]=0.1$ mM, pH=6.7) was used as subphase for the second measurement (Figure 2).

The surface pressure - area isotherm and the surface potential (ΔV) can be recorded and displayed using the *KSV LayerBuilder* software. The data gathered during this experiment was used to generate the two graphs.

In the case of Figure 1 (deionized water), ΔV_{max} was found to be 322 mV. Upon changing the subphase from water to cadmium chloride, the measured ΔV_{max} was reduced to 209 mV. This lower ΔV_{max} value can be explained by the interaction of Cd^{2+} ions with the dissociated carboxylic acid head groups of the Stearic acid monolayer, contributing to a decrease in surface potential. These results are in very good agreement with literature¹.

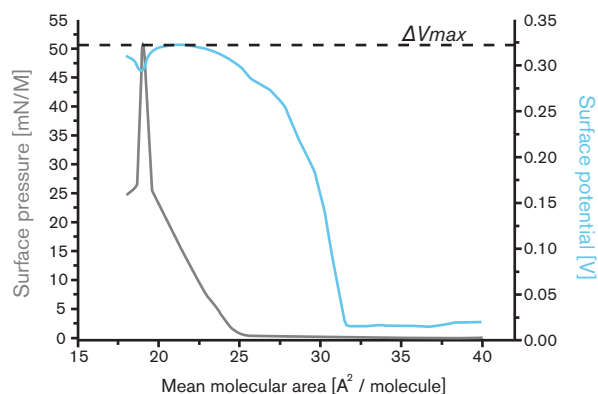


Figure 1: Isotherm and Surface potential on deionized water.

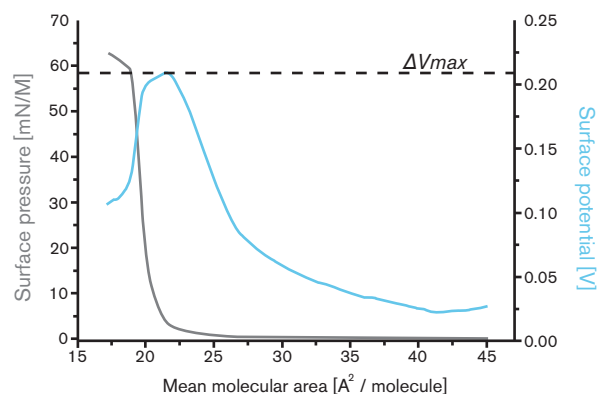


Figure 2: Isotherm and Surface potential on $CdCl_2$.

¹ Lindén, D.J.M. et. al. *Langmuir* 10 [5] (1994) 1592-1595