

How to Create Thin Film Coatings with Controlled Packed Density



Coatings and thin films made from nanoparticles are gaining recognition and use in various products and applications including displays, sensors, medical devices, energy storages and energy harvesting. The challenge to achieve a homogenous coating fulfilling the requirements of optimized packing density, particle organization and film thickness is well-known. The performance and efficiency for these types of application are dependent on the coating characteristics.

Sophisticated Thin Film Technology

One of the most sophisticated techniques for creating thin films and coatings of nanoparticles are [Langmuir-Blodgett \(LB\)](#) and [Langmuir-Schaefer \(LS\)](#). The film is created by depositing material on an aqueous subphase confined in a shallow chamber

called trough top (3). The monolayer can then be compressed with the help of a set of barriers (2). The surface pressure thus the packing density is controlled via the pressure sensor (4) of the Langmuir Trough.

Vertical and horizontal controlled coating

In the case of [Langmuir-Blodgett \(LB\)](#) deposition the sample is moved vertically through the monolayer. While in the case of the [Langmuir-Schaefer \(LS\)](#) method the sample is brought to the interface horizontally. Langmuir films can be transferred to solid surfaces with preserved density, thickness and homogeneity of the sample.

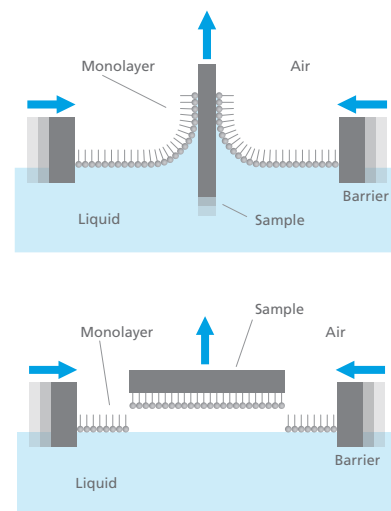
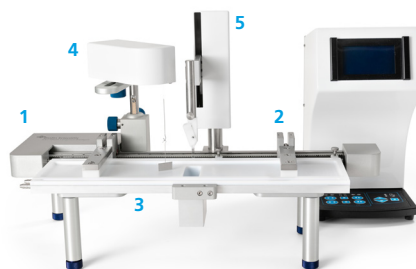


Figure 1 Langmuir-Blodgett deposition (above) and Langmuir-Schaefer deposition (below).



KSV NIMA Thin Film Coating Solution

The Ultimate Tool for Nanoparticle Coating Creation

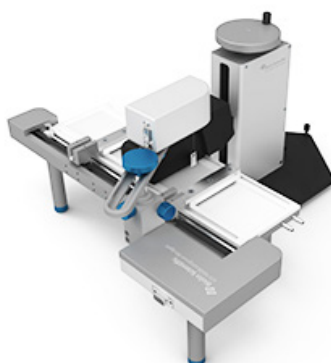


Figure 2 Langmuir and Langmuir-Blodgett trough (above) and Langmuir-Schaeffer holder (below to the left) and MicroBAM (below to the right).

What you can do

- Get precise control of the thin film thickness and packing density
- Create homogeneous depositions over large areas
- Add your coating to any solid substrate
- Build multilayer structures with varying layer composition

3 Reasons to Invest

Outstanding versatility

Ambient method to coat any solid substrate with any floating nanomaterials such as nanoparticles or graphene oxide.

See your film

The MicroBAM microscope lets you see your film prior to the deposition, ensuring optimal quality and homogeneity of your coating and reducing time spend on measurements.

Maximum value

The package offer brings you maximal value to acquire several technologies to your lab on one go.

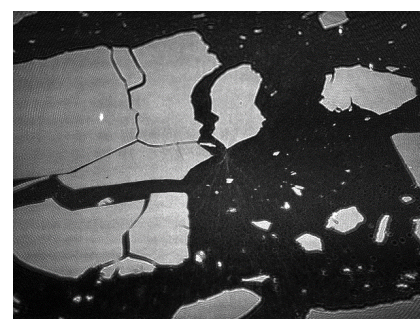


Figure 3 MicroBAM image of stearic acid layer on water.