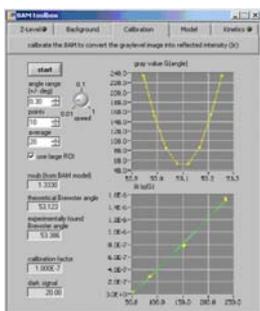


## BAM Tools & Z-Lift

### Visualization of monolayers on liquid surfaces with your EP<sup>3</sup>!

As you probably know your EP<sup>3</sup> already includes a Brewster Angle Microscope (BAM) for visualization of monolayers on liquid surfaces. In order to optimize the operation of your EP<sup>3</sup> as a BAM we introduce our new software AddOn.

#### The new BAM Tools enable



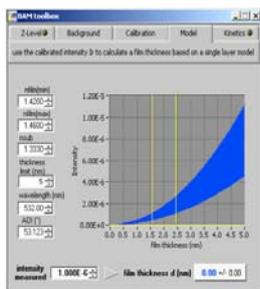
- **Fast BAM calibration**

The calibration is needed in order to use the „model“ to calculate film thickness from the reflectivity. Intensity is recorded as a function of the angle of incidence. There will be a plot of the gray value with a parabolic fit, from which the fit results “experimental Brewster angle”, “calibration factor”, and “dark signal” are calculated.



- **Easy background correction to get high image quality**

The background correction is a powerful tool to get high-quality images of your samples. Operating in a separate background-window you can record a reference image for background subtraction. This reference image can be subtracted from any image you may record later on. Artefacts due to the laser beam profile and interference will thus be filtered out of the images.



- **Simple modelling for BAM measurements**

The Model converts intensity, which is measured in the “Kinetics”-page, into film thickness. The model also simulates intensity as a function of film thickness in a range of a minimum and a maximum of the refractive index of the film.



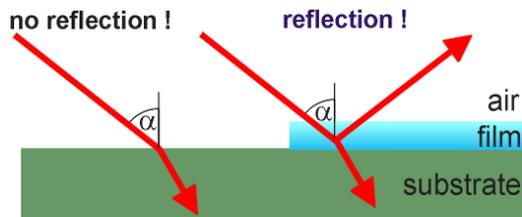
- **To monitor kinetics, e.g. adsorption kinetics**

The reflected intensity is recorded with “time increment” and “average”. The “Graph”-window displays the recorded data as a function of time.

## BAM Tools &amp; Z-Lift

**Reminder: Brewster Angle Microscopy**

David Brewster was a 19th century Scottish physicist who investigated the reflection of light from polished surfaces. Microscopy of Langmuir films by the Brewster Angle technique allows optical imaging of monolayers at the air-water interface and is a powerful tool for studying the structure of mono-molecular layers.

**Incident light from air to water**

$$\tan \alpha = n_2 / n_1$$

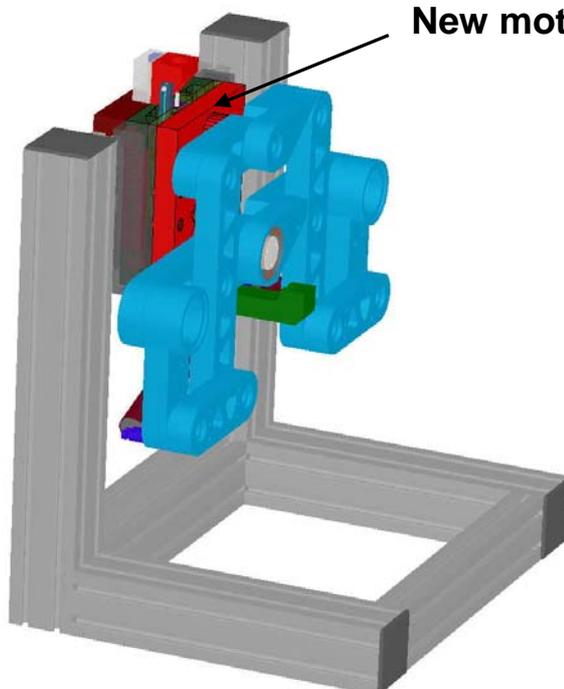
Brewster's law (1815)

When light travels from a rare to a dense medium, such as air to water, its progress is determined by its angle of incidence. Steep angles of incidence cause the light to be diffracted into the dense medium, while shallow angles cause it to be reflected back into the rare medium. At a critical angle, the Brewster angle, the light actually propagates along the interface of the second media.

If the boundary between the media contains imperfections or variations in refractive index, then some of the light will be scattered out of the interface and can be captured as an image. Hence, if there is a monolayer on the water surface, it will cause some of the light to be scattered and an image of the effect that the monolayer has on the propagated light can be captured.

**Precise height adjustment with the new motorized z-lift**

Together with the new motorized z-lift the BAM Tools AddOn also enables **auto-leveling** to compensate the shift of the water level caused by evaporation of the liquid. The new motorized z-lift enables to move the complete goniometer of your EP<sup>3</sup> and is especially designed for trough measurements. The new z-lift can be added to your EP<sup>3</sup> easily.

**New motorized Z-lift :**

- travel range: 50 mm
- travel speed: 0,5 - 50 mm / min.
- can be upgraded to your EP<sup>3</sup>
- especially designed for trough measurements