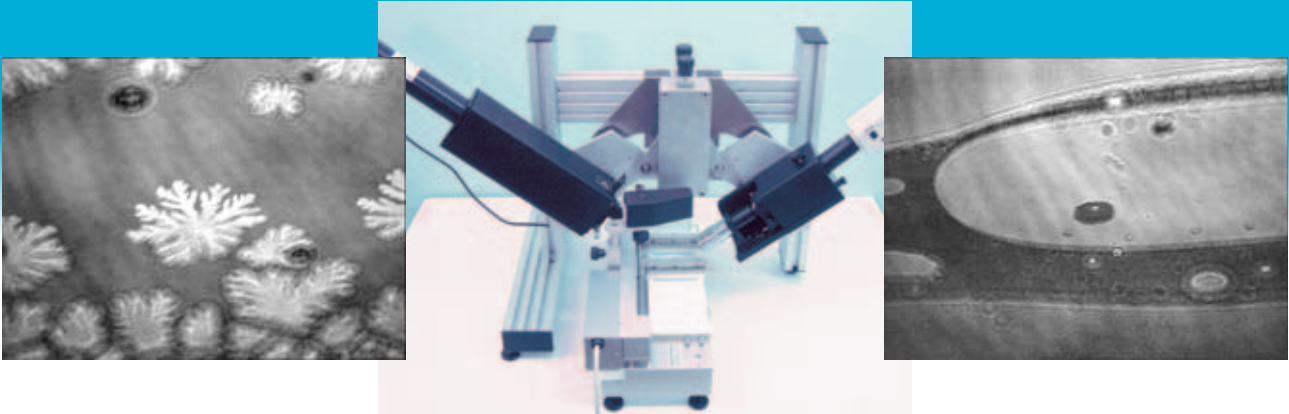




# BAM – Brewster Angle Microscope



## KSV Optrel BAM 300

BAM – Brewster Angle Microscopy, is a special technique for investigation of organic thin films. The KSV Optrel BAM 300 is a laser powered, CCD video camera imaging microscope for real-time observation of Langmuir films at the air/water interface or on dielectric substrates.

Live video imaging at a lateral resolution of  $1\ \mu\text{m}$  and at speeds of up to 25 images/sec are displayed on the computer screen while the data is recorded to the hard disk.

Compared to other characterization methods KSV's BAM technique provides the most powerful and economical means for non-invasive (non-contact) study of your thin films.

## Applications

- Phase behavior of monolayers - domains and order phenomena
- Influence of subphase compositions on monolayer structures
- Phase separation in monolayers and thin films
- Real-time monitoring of photochemical reactions
- Real-time monitoring of polymerization reactions
- Detection of surface active materials
- Gibbs adsorption layers
- Formation of multilayers
- Monitoring surface treatments
- Determining the quality and homogeneity of thin (organic) films and LB films
- LB- films on solid structures

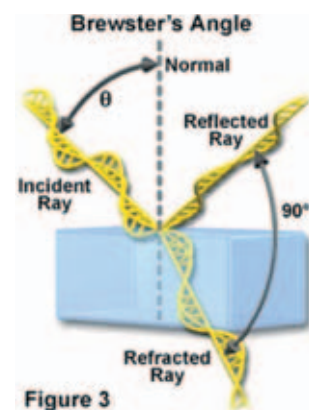


Figure 3

## What is a Brewster Angle Microscope – BAM?

The Brewster angle is defined as the angle at which the intensity of the vertical component of reflected linearly polarized light passes through a minimum. The Brewster angle is controlled by the refractive indices of the materials in the system. For example, the Brewster angles for the air/water, air/glass and air/diamond interfaces are respectively  $53^\circ$ ,  $57^\circ$  and  $67.5^\circ$ .





# KSV Optrel BAM 300 advantages

Because BAM reflection is only about a millionth of the incident intensity high demands are put on the optical components used i.e. laser, polarizers, lens and CCD camera. KSV Optrel BAM 300 design criteria is based on the following principles.

- Reasonable price without compromising component quality
- Manual goniometer adjustments
- Better designed optics enables usage of less expensive laser
- More sensitive camera requires lower light intensity
- Bigger numeric aperture (due to the improved optics) requires lower light intensity
- Better quality objectives, e.g. with high quality antireflection coatings
- High quality Glan-Thompson polarizers with 10-8 polarizing ratio
- Advanced image processing software
- High precision adjustment of goniometer

## Specifications

<b>Software</b>	User friendly interface under Windows 2000/XP, with built in controls for the KSV LB troughs.																				
<b>Mechanics</b>																					
Goniometer	Easily adjustable within the angular range 45° - 75°, accuracy 0.01°.																				
Analyzer/Polarizer	Miniature precision rotating stages, easy to adjust.																				
Vertical lift	Highly accurate and simple vertical adjustment of the BAM.																				
Mounting bridge	Flexible, customizable mounting bridge with leveling screws. Easy to install together with KSV LB troughs.																				
<b>Imaging</b>																					
Camera	Computer controlled, high grade CCD camera with 768 x 576 pixels, variable electronic shutter speed and gain controls, CCIR as standard (EIA as option)																				
Image processing	<ul style="list-style-type: none"><li>• Continuous real time monitoring of moving objects</li><li>• Various dedicated image processing functions<ul style="list-style-type: none"><li>• Re-sizing</li><li>• Profile</li><li>• Filtering</li><li>• Background compensation</li></ul></li><li>• Image storage on hard disk, storing into files and database</li></ul>																				
<b>Optics</b>																					
Light Source	Standard HeNe laser, 10 mW @ 633 nm																				
Objectives and Field of View	<table><thead><tr><th>Magnific.</th><th>Working Dist.</th><th>Num.Apert.</th><th>Field of view (w x h, appr.)</th></tr></thead><tbody><tr><td>5x</td><td>34 mm</td><td>0.14</td><td>800 x 600 microns</td></tr><tr><td>10x</td><td>33.5 mm</td><td>0.28</td><td>400 x 300 microns – option</td></tr><tr><td>20x</td><td>20 mm</td><td>0.42</td><td>200 x 150 microns – option</td></tr><tr><td colspan="4">Others: please consult factory</td></tr></tbody></table>	Magnific.	Working Dist.	Num.Apert.	Field of view (w x h, appr.)	5x	34 mm	0.14	800 x 600 microns	10x	33.5 mm	0.28	400 x 300 microns – option	20x	20 mm	0.42	200 x 150 microns – option	Others: please consult factory			
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Spatial Resolution	2 microns.																				
Angle of incidence	45° - 75°																				
Polarizing Optics Options	High quality Glan-Thompson polarizers <ul style="list-style-type: none"><li>• LB Troughs, several sizes and versions</li><li>• Choice of three exchangeable objectives</li></ul>																				



## Instruments

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