

## NANOPTICUM

### SURFACE PLASMON RESONANCE ENHANCED ELLIPSOMETRY (SPREE), IMAGING ELLIPSOMETRY AT THE LIQUID/LIQUID INTERFACE AND THE NEW HALCYONICS\_WORKSTATION\_I4

#### *New Products:*

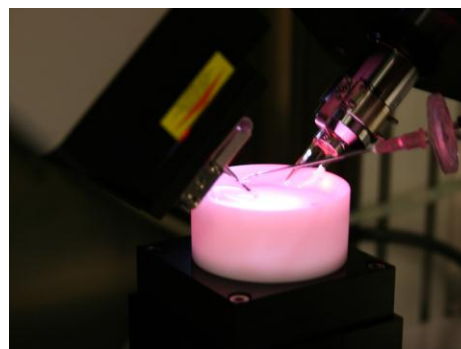
- Imaging the liquid/liquid interface: nanofilm\_light\_guide
- Halcyonics\_workstation\_i4
- Temperature control: nanofilm\_tc\_200

#### *Theses on imaging ellipsometry:*

- R.M. Fabre (2010): Supported Lipid Bilayers at Skeletonized Surfaces for the Study of Transmembrane Proteins.

#### *View to literature:*

- N. Moridi et al. (2012): Monolayers of an amphiphilic para-carboxy calix[4]arene act as templates for the crystallization of acetaminophen



In detail: new tool to image the liquid/liquid interface

Dear Sir/Madam

To image the liquid/liquid interface, we offer the new nanofilm\_light\_guide, based on a development at the working group of Prof. Mugele (Twente University). With this new tool, imaging ellipsometry at variable angles of incident ( $40^{\circ}$ - $72^{\circ}$ ) can be performed at liquid/liquid and solid/liquid interfaces.

In our series about theses on imaging ellipsometry, we highlight the work of Ms. Roxane M. Fabre from the University of Florida about ellipsometry and surface plasmon resonance enhanced ellipsometry (SPREE) in transmembrane protein studies.

At literature, we will have a view on monolayers as templates for the crystallization of Acetaminophen - a publication from the working group of Patrick Shahgaldian (University of Applied Sciences Northwestern Switzerland) - including thickness micro maps with great steps.

We hope you enjoy our current issue of the Nanopticum.

Best regards

Yours,

*Accurion team*

## November 2012

Nov 28-29, 2012, Precisiebeurs,  
Veldhoven, The Netherlands  
[www.precisiebeurs.nl](http://www.precisiebeurs.nl)

Dec 10-11, 2012 MicroNano Conference  
Ede, The Netherlands  
[www.micronanoconference.nl](http://www.micronanoconference.nl)

Dec 29-31, 2012, INDO-US Symposium,  
Bangalore, India  
[chemeng.iisc.ernet.in](http://chemeng.iisc.ernet.in)

May 26-31, 2013, ICSE-VI 2013,  
Kyoto, Japan  
[www.icse6.org](http://www.icse6.org)

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## NANOPTICUM - SPREE, HALCYONICS WORKSTATION I4-LARGE AND IMAGING ELLIPSOMETRY AT THE LIQUID/LIQUID INTERFACE

### New Products:

#### nanofilm\_light\_guide

Imaging the liquid/liquid interface or measure angle of incident spectra of solid samples under a liquid.

*Scope of application:* adsorption, phase behaviour and biomolecular interaction at the liquid/liquid interface - swelling of polymer films - easier sample handling of supported bilayers.  
Current limitation: 2x objective

#### nanofilm\_tc\_200

Heating chamber for measurements at temperatures up to 200 °C

#### Halcyonics\_workstation\_i4

The halcyonics\_i4 system is now available as a workstation system. Following the example of the Workstation\_Micro, the i4 is set into a steel frame and surrounded by a scratch-resistant plate. Thanks to the low profile of the i4 system, the new version comes with increased ergonomics. The overall dimensions have been changed to provide additional space for further equipment.

*Scope of application:* Ultramicrotomy - Biomedical Atomic Force - Microscopy (Bio-AFM) - Microinjection (e.g. In Vitro Fertilization) - Micromanipulation - High-resolution Fluorescence Microscopy - and many more...

### View on literature:

#### MONOLAYERS OF AN AMPHIPHILIC PARA-CARBOXY CALIX[4]ARENE ACT AS TEMPLATES FOR THE CRYSTALLIZATION OF ACETAMINOPHEN

A tetra-carboxy-tetradodecyloxy-calix[4]arene, has been studied at the air-water interface, for its ability to interact with acetaminophen. LB films of tetra-carboxy--tetradodecyloxy-calix[4]arene have been characterized using imaging and spectroscopic ellipsometry. The results suggest that each monolayer has an average thickness of 18 Å, which is consistent with the molecular structure of self-organized molecules parallel to the interface with the alkyl chains pointing out parallel to the axis of the macrocycle and without interdigitation of the alkylchains. The presence of APAP in the subphase during the LB transfer causes a limited but relevant increase in the layer thickness.

Moridi N, Danylyuk O, Suwinska K, Shahgaldian P. (2012) Monolayers of an amphiphilic para-carboxy-calix[4]arene act as templates for the crystallization of acetaminophen. *J Colloid Interface Sci.* 377:450-455.  
([Download](#))

### Theses on Imaging ellipsometry

#### SUPPORTED LIPID BILAYERS AT SKELETONIZED SURFACES FOR THE STUDY OF TRANSMEMBRANE PROTEINS

(R.M. Fabre (2010) University of Florida)

The work of R.M. Fabre shows new approaches towards the development of membrane model systems to immobilize proteins. Zirconium phosphonate surfaces were used as a support for lipid bilayers. Two models that provide stable, functional and reproducible membranes, have been developed to enable the immobilization of membrane proteins. To characterize the design, surface morphology, and stability of the model systems she analyzed them with surface plasmon resonance enhanced ellipsometry (SPREE) and ellipsometry. Both techniques provided insightful details on the kinetic binding, self-assembly monolayer formation and stability of the biosensors - very good job!

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### New @ youtube:

[Active vibration isolation - card house](#)

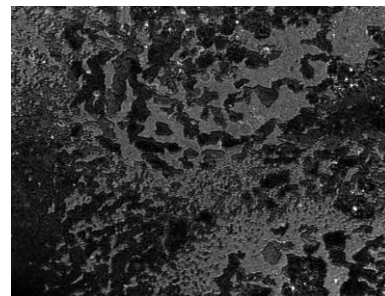
[Active vibration isolation - isolating the water surface](#)



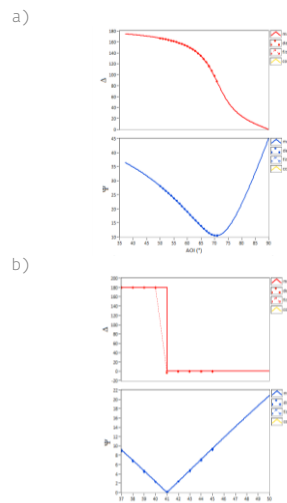
- nanofilm\_tc200 with controller integrated in electronical box of the ellipsometer



- Halcyonics\_workstation\_i4



- Image of the monolayer: Cetylpyridiniumbromid at the toluene/water interface



- Angle of incident spectra of the water|SiO<sub>2</sub>|Si and toluene|water interface