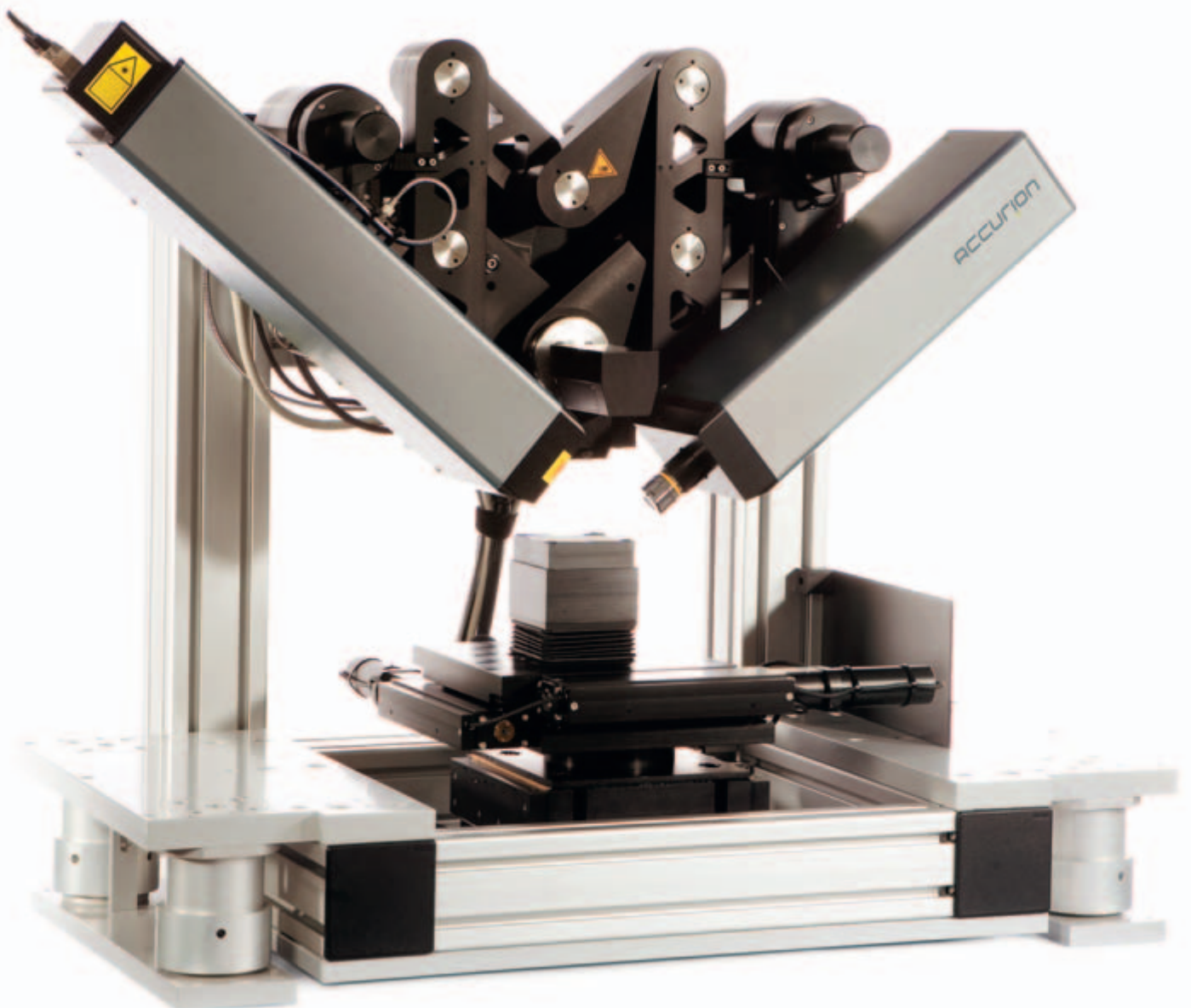


# ACCURION

solutions for science

`_imaging` ellipsometry  
`nanofilm_ep3se`



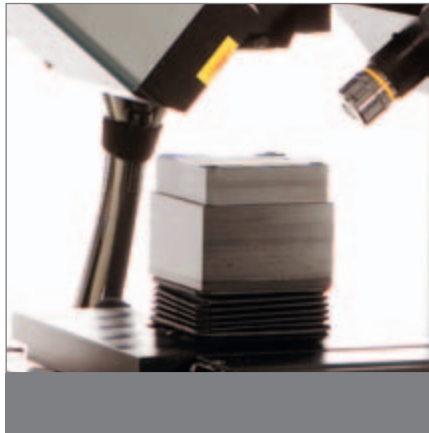
# Spectroscopic Imaging Ellipsometer

## nanofilm\_ep3se

### ABSTRACT

Classical Ellipsometry has been in use as a powerful characterization technique for thin films for over 100 years. With Imaging Ellipsometry the size of the object under investigation may be reduced to the micrometer range and by this accomplishing the need to measure on micro-structured samples. For example, reactive coatings on cantilever-based microsensors may be characterized by Imaging Ellipsometry, being inaccessible to the large spot size of conventional ellipsometers.

Simultaneously, it is possible to generate maps of ellipsometric data with spatial resolution down to a micrometer, while preserving the sub-nm film thickness resolution of a classical ellipsometer. Spectroscopy at the imaging level is possible from 360-1000 nm and offers the capability of imaging ellipsometry for thicker layers. In general, a higher number of independent measurements enable a higher number of fit parameters - in practice, it means more information about your sample.



### FEATURES

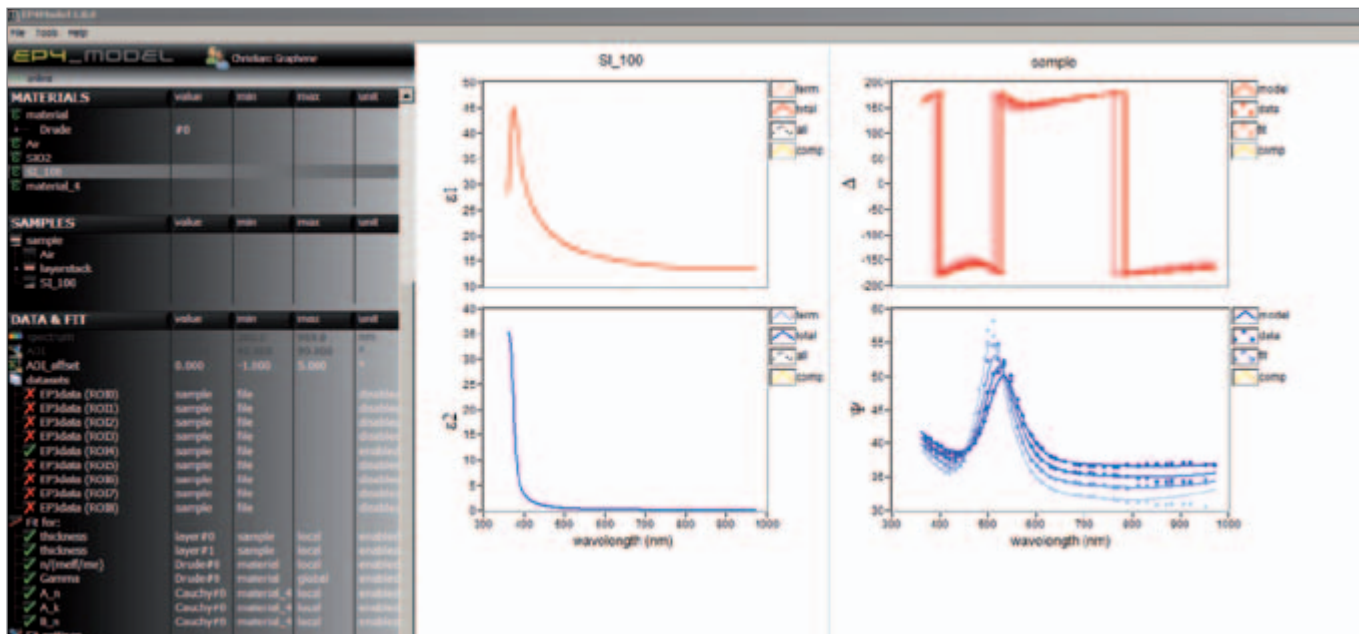
- Nulling Ellipsometer in PCSA-configuration
- Solid state laser (532 nm, 20 mW) - other lasers on request
- Separate spectroscopic box with Xenon Arc lamp and 46 interference filters in the range between 360 and 1000 nm
- 768 x 572 pixel CCD camera
- 10 x objective
- epView-software, new ep4\_model software
- Patented motorised goniometer
- Manuel sample handling stage
- epView-software, new ep4-modelling

### BENEFITS

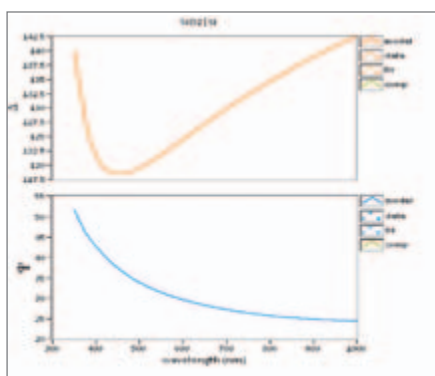
- Three in one - imaging ellipsometry, Brewster angle microscopy and imaging SPR with one instrument!
- Real time ellipsometric contrast micrographs for direct visualization of your sample - see what you are doing as you do it
- Highest lateral resolution in the field of ellipsometry enabling the investigation surface for structures down to 1 micron lateral dimension
- Interactive and easy to use optical modeling
- Imaging of thin layers on liquid surfaces
- Making ellipsometry available for small samples and structured or inhomogenous surfaces
- Two light sources Lamp & laser
- More wavelengths, more data => more film properties
- Optical properties at wavelength of interest
- Higher sensitivity by using selected wavelengths

### APPLICATIONS

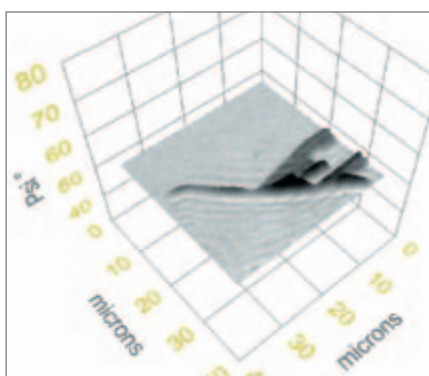
- Microscale sample: Thin Films thiol/gold on Si-cantilever; thin film antireflection coatings
- Antireflection of laser facets
- Structured Films: Lateral phase separation in a mixed bilayer (Phospholipids); Photopatterned supported phospholipid membrane; Micropatterned Polymers;
- Transparent Substrates: combined angle of Incidence and wavelength spectra of  $Fe_3O_4$  film on 50  $\mu m$  thin mica plate
- Microarrays: Biochips; Protein Interaction; Kinetic-Reader; Multi channel measurements
- ... as well as all Applications of the nanofilm\_ep3sw and many more ...



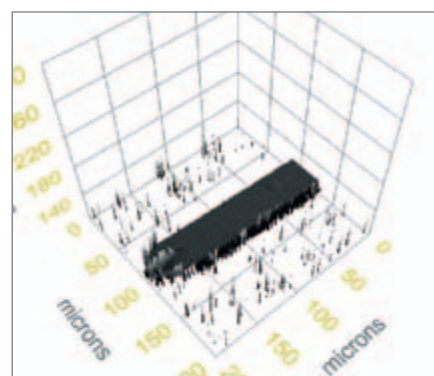
The interface of ep4-model – a new interactive and easy to use tool for the optical modeling.



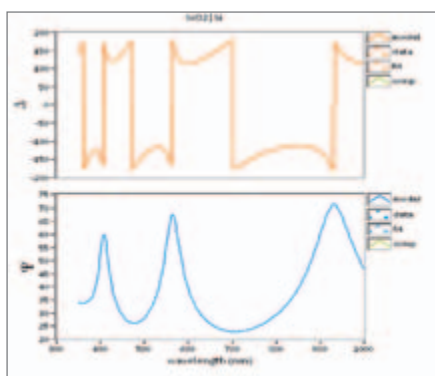
SiO<sub>2</sub>/Si: Simulation of Delta/Psi wave-length spectra with a 60 nm SiO<sub>2</sub> layer



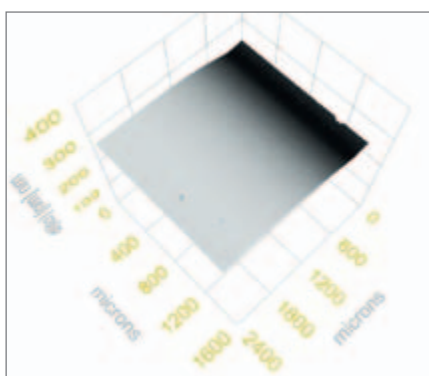
Psi-map of a graphene mono- and bi-layer on a SiO<sub>2</sub>/Si substrate



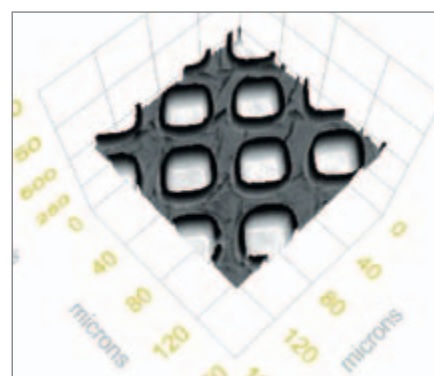
Delta-map of a surface coated cantilever



SiO<sub>2</sub>/Si: Simulation of Delta/Psi wave-length spectra with a 600 nm SiO<sub>2</sub> layer



ITO/SiO<sub>2</sub>/Si sample: large field of view thickness map of ITO layer



SiO<sub>2</sub>/Si sample: thickness map

#### UPGRADE POSSIBILITIES

- Upgrade to an Imaging SPR Analyzer
- Combination of Imaging Ellipsometry and AFM

#### RECOMMENDED ACCESSORIES

- Automatic Sample Handling Stage
- Laser Safety cabinet
- Solid/liquid and SPR cells
- Temperature Control

- Liquid Handling
- 2x, 5x, 20x, 50x objective
- Bean cutter
- Beam expander
- ep3View-Software Add Ons
- LB-Trough, Z-Lift
- Active Vibration Isolation

