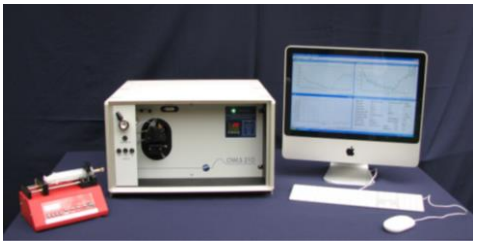
OWLS™ 210

Optical Waveguide Lightmode Spectroscopy System

The OWLS™ 210 is a high sensitivity (~1ng/cm^2) , label free biosensor system. Chemical and bio-chemical interactions can be followed and quantified in real time, thus revealing the specificity, the dynamics and the strength of the reaction and/or the binding.

OWLS™210 MEASURING SYSTEM

- **OWLS™ 210 main unit** includes the optical-mechanical basic unit with electronic control, data acquisition and temperature control and sensor holder. A Peltier controlled subunit for in situ, vibration-free heating and cooling of the sensor holder in the range of 20°C to 80°C. Temperature stability of the sensor chip is better than 0.1 °C , heating/ cooling rate ~8°C/min. Optionally the potentiostat is also built in for EC measurement.
- **PC/ Apple iMac** is communicating with the OWLS™ 210 unit via USB port. MS Windows™ XP operation system is installed on the PC.
- **OWLS SIS Sample Injection Subunit** provides bubble-free, controlled flow rate fluid supply through the sample cuvette with flow rate setting in the range of 0,1 µl/min - 30 ml/min. Selectable 20µl - 500 µl sample loop is offered for controlledvolume sample injection.
- **BioSense** software is a MS Windows compatible application software that provides flexible control of measurement on OWLS™210 instrument, data acquisition, analysis and storage. It is designed for easy parameter set-up and data display.



The basic principle of the OWLS method is the following: linearly polarized light (He-Ne laser) is coupled by a diffraction grating into the waveguide layer, provided that the incoupling condition is fulfilled. The incoupling is a resonance phenomenon that occurs at a precise angle of incidence, which depends on the refractive indices of the medium covering the surface of the waveguide. The light is guided by total internal reflection to the ends of the waveguide layer where it is detected by photodiodes. By varying the angle of incidence of the light the mode spectrum can be obtained from which the effective refractive indices are calculated for both the electric and magnetic modes. The analyte under investigation is in a cuvette fixed over the optical grating coupler waveguide sensor chip. This assembly is mounted on a precision goniometer, which adjusts the angle of incidence of the external laser beam.

OPTIONAL

Electro-Chemical OWLS System

OWLS measurements with ITO coated OW 2400 sensor & EC cuvette. Transparent electrically conductive layer on the sensor surface allows investigation of surface adsorption processes under electric field. When Potentiostat/galvanostat is connected to EC-OWLS cuvette, the software allows one to run standard techniques such as cyclic voltammetry, chronoamperometry, square wave, and differential pulse voltammetry.

Fluoro-OWLS measuring System

OWLS measurements with special fluoro-cuvette allows combined fluorescent labeled & OWLS measurements. Optional Fluoro– BioSense software module is offered for data evaluation & interpretation.

AUTOMATIC REFRACTOMETER

Designed specifically for measuring materials to be used in the Optical Waveguide Lightmode Spectroscopy (OWLS) system; The Automatic refractometer allows measurement of the refractive index of the cover medium (nc) off-line or in-line. Applying the measured nc in the BioSense software further enhance the accuracy of the calculations

SENSORS

OW2400, OW2400c, OW2400-EC (see separate datasheets)

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