

BioSense for OWLS™ 210

Data Acquisition and Evaluation Software

BioSense is a MS Windows compatible application software that provides flexible control of measurement on OWLS™ 210 instrument, data acquisition, analysis and storage.

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. The measurement and analysis are rapid and convenient.

The comprehensive database structure of BioSense software offers password protected user-hierarchy and profile. Each measurement can be classified in projects and experiments. Several keywords, text fields allow detailed description of the measurement conditions. Sensor related data are also implemented in the database. All these measurement-, sensor- and user-related data can serve as search condition in the database.

FEATURES

CONTROL & MEASUREMENTS

Real time, high speed chemical or bio-molecular interaction detection.

BioSense software completes full control of OWLS™ 210 instrument: stepping motor control, auto-range control of photocurrent measurement, temperature measurement, timing, auto-calibration of angle reference point etc.

Three measurement modes are available:

- PEAK: Measurement of incoupled light intensity versus angle of incidence of the laser light
- RIM: Continuous measurement of incoupling parameters, temperature, refractive index of cover medium, time resolution 1-3 sec.
- FLUCTUATION: Continuous photocurrent measurement at a fix angle of incidence of the laser light.

OPTIONS: EC-BioSense—Electrochemical software module
Fluoro-BioSense— Fluorescence software module
Control of Automatic refractometer
Control of Syringe Pump

VISUALIZATION

Built-in graphing tool for continuous visualization of measurement.

ANALYSIS

BioSense provides evaluation of sensing parameters from the measured incoupling angles by using appropriate optical models.

The calculated parameters are:

- Refractive index (n_F), and thickness (d_F) of the waveguiding film, self calibration of the sensor parameters
- Refractive indices of the cover medium (n_{CTE} , n_{CTM})
- Refractive index (n_A) and thickness (d_A) of the adsorbed material
- Mass per square centimeter of the adsorbed layer
- Qualitative kinetic information (dM/dt versus M)

MULTI-USER ENVIRONMENT

Password protected user profiles for personalized access and setting of measurements.

DATA EXPORT

Measurement results and calculated values can be exported to popular charting and spreadsheet formats (Excel, Origin, etc.)
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MAIN BIOSENSING APPLICATIONS:

- Adsorption of proteins at surfaces
- Ligand/receptor binding
- Immunosensing
- Protein—lipid bilayer interactions
- Protein—DNA interactions
- Growth and spread of living cells at surfaces
- Cell assays
- Analysis of association and dissociation kinetics
- Food quality monitoring
- Bio compatibility
- Drug screening
- Molecular self-assembly & nanoscience

REFERENCES:

Vörös, J. J. Ramsden, G. Csucs, I. Szendrő, S.M. De Paul, M. Textor, N. D. Spencer "Optical Grating Coupler Biosensors", *Biomaterials* 23 (2002) 3699-3710