TIRF Biosensor Instrument Fluorogazer

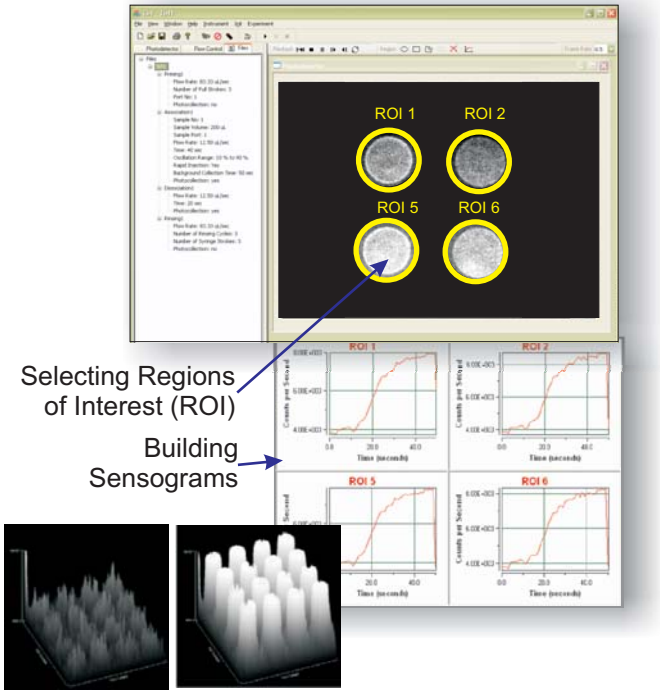
- *Turnkey TIRF biosensor instrument*
- *Limit of detection - single molecules*
- *Computer-controlled fluidics and filters*
- *Fluorescence polarization measurements*
- *Multicolor LED and laser illuminator*
- *Photon counting PMT / EMCCD camera*
- *Optional electrochemical control*
- *Optional temperature control*
- *Optional spectrometer (emission spectra)*
- *Chemically modified TIRF sensor chips*
- *User friendly software*

TIRF Biosensor Fluorogazer

The Fluorogazer is a turnkey total internal reflection fluorescence (TIRF) fluorometer equipped with computer-controlled fluidics, a multicolor illuminator, filter wheels at the emission channel, and a photon counting PMT or EMCCD camera as photodetectors. The limit of detection is at the level of single molecules. It is a cost effective, modular, upgradeable system, with automated delivery of multiple bioanalyte solutions and pure buffers. The Fluorogazer is interfaceable with autosamplers for unattended analyses. A seven color illuminator is equipped with silica optics. Filter wheels at the emission channel provide the detection of fluorescence in UV, visible, and near IR ranges of spectrum. Optional ElectroChemical (EC) polarization, electric field, and dielectrophoretic control can be used with Fluorogazer for manipulating with biomolecules and live cells directly in the TIRF flow chamber. Different EC programs accelerate mass transfer, stimulate association, and are capable of lysing cells or electroporating cell membranes. EC polarization can be used for the regeneration of assays immobilized at the TIRF surface, or discriminating between close homologs. The Fluorogazer is supplied with reagent kits for the immobilization of biomolecules, chemically modified TIRF sensor chips, and disposable sensor cartridges for biohazardous analytes. User friendly software contains templates for typical TIRF sensogram measurements, wizard for designing custom-defined fluorescence polarization, resonance energy transfer (FRET), and fluorescence recovery after photobleaching (FRAP).

Data Acquisition and Processing

Building of sensograms and calculating rate constants for selected regions of interest (ROI)

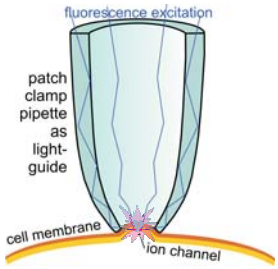


Analysis of Biomolecular Interactions Molecular Diagnostics

*i*Diagnostics (*i*TIRF Arrays)
TIRF Microscopy
TIRF Spectroscopy

TIRF Labs
Total Internal Reflection Fluorescence

Single ion Channel Single Molecule Detection



Patch clamp technique combined with fluorescence single molecule detection

*i*Diagnostics
cellphone based molecular diagnostics

We extended TIRF into 3rd dimension and invented iDiagnostics
Now you can hold a hospital laboratory in the palm of your hand

Turnkey Single Molecule Detection TIRF Microscopy System

Modular TIRF systems include:

- Fluorescence microscope
- lg-, p-, or/and o-TIRF microscopy flow systems
- Low light EM CCD camera
- Multi-color computer-controlled illuminator
- Computer-controlled fluidics system
- Potentiostat and/or wave-function generator
- Software for instrument control and data analysis

Lightguide-, Prism-, and Objective-based TIRF Microscopy

- Use YOUR microscope and YOUR objectives
- lg-and p-TIRF work with dry, water-, and oil-imm. lenses
- Use Xenon lamp, LED, or laser illuminators
- Open perfusion or closed flow chambers
- Install/uninstall in less than one minute
- Optional electrochemical control and computer-controlled fluidics

Olympus

Nikon

Zeiss

Leica

TIRF Accessories for Fluorometers

- **TIRF Accessory** transforms your spectrofluorometer into a super-sensitive TIRF biosensor instrument
- Optional electrochemical, DEP and temperature control
- **SmartFlow** Fluidic System allows to run unattended TIRF experiments, measure sensograms to derive k_{on} and k_{off}
- Novel microfluidics allows for handling nanoliter volumes