



SmartFlow Fluidics System TF1005



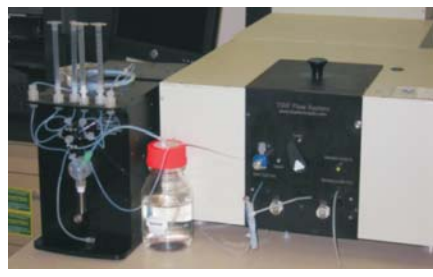
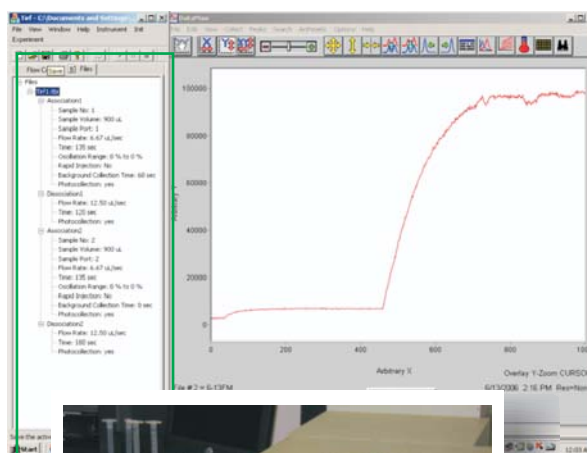
Features

- Facilitates measuring of TIRF sensograms to derive k_{on} and k_{off}
- Minimizes the effects of mass transfer and dead volumes
- Automated processing of multiple analyte solutions and buffers
- Automated sample loading/injection
- Profiled flow rate extends association stage
- Templates for standard and wizard for customized experiments

Specifications

- Precision digital syringe pump and computer-controlled valves
- Default syringe volume: 2500 μL , optional syringes 50 μL -5 mL
- Flow rates: 0.0001 $\mu\text{L}/\text{sec}$ - 5000 $\mu\text{L}/\text{sec}$
- Minimum sample volume - 20 μL ; maximum - 2500 μL
- USB communication port interfaces SmartFlow with computer

The SmartFlow TF1005 is a compact, stand-alone fluidics, which facilitates the measurements of kinetics and the analysis of biomolecular interactions. SmartFlow is equipped with a precision syringe digital pump and computer-controlled valves. It is designed for use with TIRF spectroscopy, TIRF microscopy, SPR, SERS, electrochemical, and other real-time analytical techniques that employ flow cells, where one partner of the interactions (receptor or "capture" molecule) is immobilized at the surface of a sensor chip, and the other partner (ligand or "target" molecule) is present in the solution phase. When the bioanalyte solution is injected into the flow cell, there is a transient period, during which the interactions are limited by mass transfer, rather than by the kinetics of receptor-ligand interactions. In traditional fluidics systems, the transient time is large. If the rate constant is fast, one needs a large amount of bioanalyte solution to resolve the kinetics. SmartFlow TF1005 allows for the minimization of the amount of bioanalyte necessary for measurements of fast rate constants. Typically, 100 μL or less of bioanalyte solution is sufficient to record a sensorgram and determine the association and dissociation rate constants k_{on} and k_{off} . In contrast to the traditional fluidics systems, SmartFlow provides a profiled flow rate, which is fast at the beginning and slower or oscillating near the equilibrium. The flow profile is precisely reproducible from sample to sample. User-friendly software guides the experimenter through all preparation stages and allows for the creation of custom-designed protocols. The fluidics operates automatically, once launched by the user. SmartFlow handles multiple bioanalyte and pure buffer solutions. Additionally, easy-to-use graphic user interface enables the user to operate the syringe pump and valves separately or intervene with manual manipulation, if necessary.



SmartFlow fluidics is recommended for use with TIRF Flow System TA1004, and lightguide-, objective- and prism-based TIRF microscopy flow systems. SmartFlow application window can be conveniently open in one screen with your fluorometer application or microscopy imaging software. SmartFlow facilitates measuring of sensograms and deriving of rate constants k_{on} and k_{off} .

iDiagnostics (iTIRF Arrays)

TIRF Microscopy

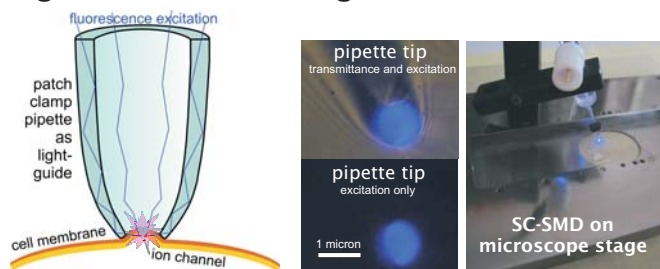
TIRF Spectroscopy



TIRF Labs

Total Internal Reflection Fluorescence

Single ion Channel Single Molecule Detection



Patch clamp technique combined with fluorescence single molecule detection

iDiagnostics

cellphone based molecular diagnostics



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



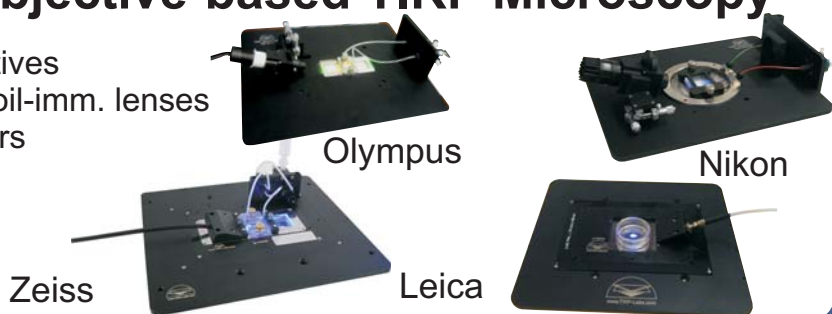
Turnkey Single Molecule Detection TIRF Microscopy System

Modular TIRF systems include:

- Fluorescence microscope
- Ig-, 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
- Ig- 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



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

