

BIAffinity[®] | Label-free analysis of molecular interactions

- Real-time analysis
- Determination of kinetic and equilibrium constants
- Referencing against non-specific interactions



BIAffinity® | Label-free analysis of molecular interactions

The BIAffinity®

Biomolecular recognition is the most important event in the biochemical pathways of living systems. What holds true for gene expression and signal transduction by hormones or neurotransmitters is also true of enzyme reactions and the immune response through antigen antibody interactions: all of these processes are preceded by the specific binding of a ligand to a biological receptor. Detecting and characterizing binding events such as these is therefore crucial for understanding the mechanisms and functions of biochemical processes.

BIAffinity® – Accurate results with a wide range of applications

BIAffinity® offers a technique for label-free detection of biomolecular interactions on solid phases, i.e., biochips. The system's most impressive features are its intuitive and simple handling, flexible sample volumes, wide choice of functional chip surfaces and self-explanatory software for data collection and evaluation. The system permits direct, time-resolved detection of binding events on specific surfaces and enables access to thermodynamic and kinetic characterizations of affinity reactions.

Standard:

- Semi-automated sample loading and injection via 5 ports

Optional:

- Autosampler for up to 96 samples
- Fully automated control of sample handling

Features

- Label-free detection of molecular interactions
- Real-time analysis
- Biochip technology
- Reflectometric interference spectroscopy (RfS)
- Determination of kinetic and equilibrium constants and concentrations
- Referencing against non-specific interactions
- Two-channel flow system
- High-performance two channel optics
- Temperature-controlled operating environment
- Available with BIA sampler (automated 96 well autosampler)

The measurement principle is based on reflectometric interference spectroscopy (RfS), which uses multiple reflection at thin, transparent layers. Incident light will be partially reflected at each thin-layer interface. A characteristic interference pattern (interferogram) is produced by superimposing the reflecting rays. Binding of molecules to the specific surface of a sensor chip causes a change in the optical layer thickness, which in turn causes a shift of the interferogram. This makes RfS a fast and elegant method for detecting binding events on surfaces.

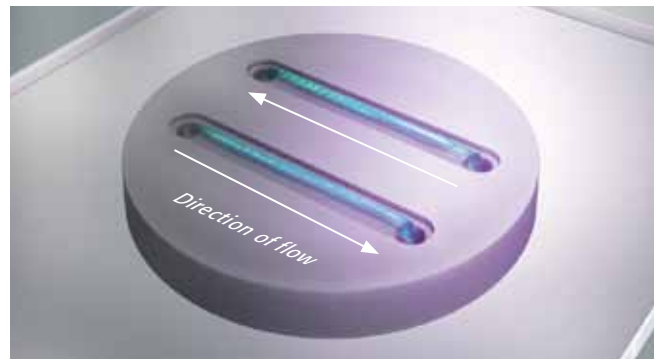
Features

- Reflectometric interference spectroscopy (RfS)
- Label-free detection principle
- Real-time analysis of binding events
- Online monitoring of interactions



▲ BIAffinity® with 96 well Autosampler

High performance fluidics is an important element of BIAffinity®. The two-channel microfluidic cell (MFC) supplies the sensor surface with a continuous and pulse-free liquid flow. A measurement and reference channel are available for each measurement, which allows referencing against non-specific interactions on the surface. Rapid exchange of buffers for assays minimizes dispersion effects. This provides highly reliable results with minimal sample usage due to its pairing with low flow-cell volumes.



Micro-Fluidic-Cell (MFC) in a temperature controlled environment

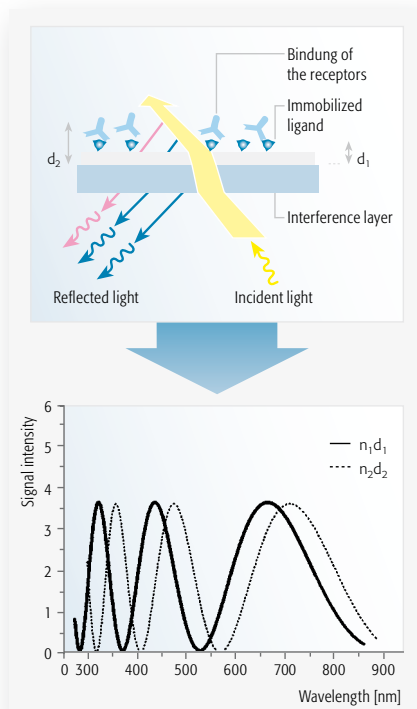
Biochip technology

The heart of the system – the sensor chip

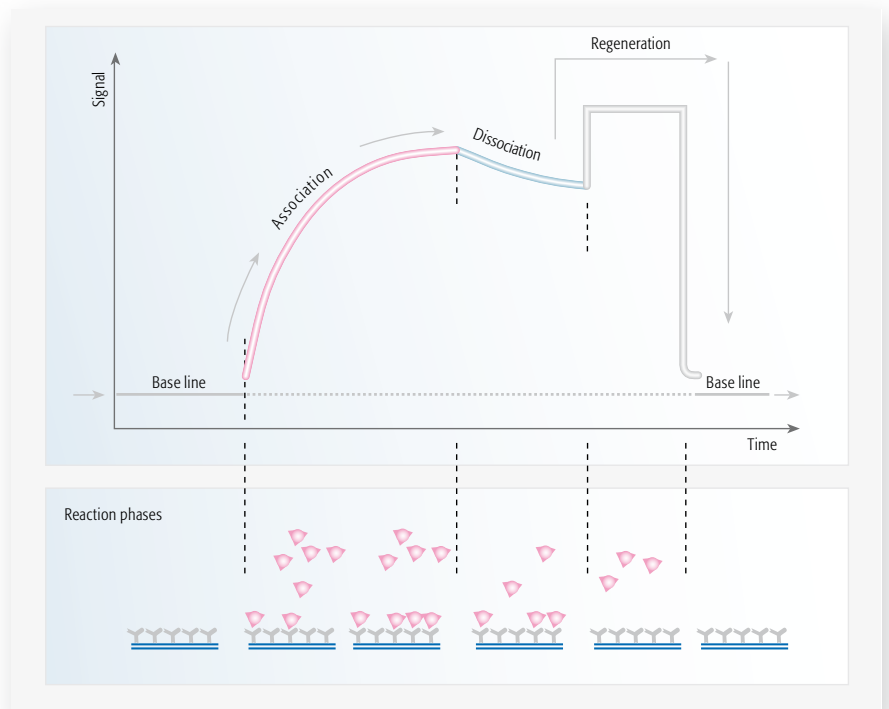
BIAffinity® uses sensor chip technology. These glass-based chips make it possible to design functional surfaces that are biocompatible and highly specific with adjustable binding capacity. Simple handling, reproducible results, minimal non-specific binding characteristics, high flexibility and regeneration stability are the hallmarks of the sensor chip.



The sensor chip, available in a wide selection of surfaces



Measurement principle of BIAffinity®



The Sensorgram: real-time monitoring of binding events, provides information about sample concentrations, kinetics and affinity

Technical data

System parameters	
Fluidic	Flow through cell, valves with extremely small dead volume < 0.7 µL
Flow rate	5 – 200 µL/min
Steps of flow rate	1 µL/min
Number of flow channels	2 (single use of channel 1, or channel 1 + 2 in series)
Internal reference subtraction	Difference of channel 1 – channel 2
Samples	
Sample handling	Automatic sample loading and injection via 5 ports
Sample volume	Injection volume +20 µL
Injection volume	10 – 200 µL
Analysis time per sample	2 – 30 min
Optional	96 well standard MTP sampler (BIAsampler)
Analysis temperature	Up to 40°C ±0.5 K
Other technical data	
Weight	Approx. 25 kg
Dimensions (W×H×D)	515 × 300 × 370 mm
BIAsampler	
Dimensions (W×H×D)	180 × 155 × 240 mm
Capacity	96 samples
Warranty	
Device without flow cell	2 years
Flow cell	½ year

Your contact