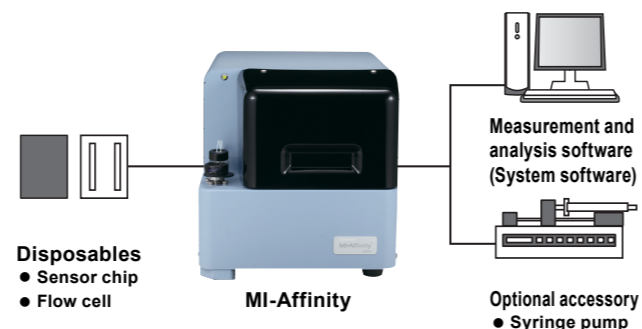


## System

Please install the included operation software (system software) on a PC.  
This product does not come with a PC itself. PC requirements are as follows:

- CPU: 400 MHz Pentium or equivalent processor minimum  
1 GHz or faster Pentium or equivalent processor recommended
- RAM: 256 MB minimum, 512 MB or more recommended
- OS: Windows XP Service pack 2 or later / Windows Vista / Windows 7

Continuous auto injections of more than one sample are available when used in combination with an HPLC pump and/or an autosampler, etc.



## Specifications

### Main Body

Body	Brand	Fluidware
	Product name	MI-Affinity
	Model	LCR-01
Basic functions	Detector technology	Reflection-type RfS (Reflectometric Interference Spectroscopy)
	Measurement subjects	Proteins, carbohydrates, lipids, nucleic acids, advanced polymers, etc.
	Information obtained	Diagram of interactions: Time variation of the wavelength giving minimum reflectance ( $\Delta\lambda$ vs. Time) Kinetics analysis, where $k_a$ : association rate constant, $k_d$ : dissociation rate constant Affinity analysis, where $K_A$ : association constant, $K_D$ : dissociation constant
Detection system (Basic configuration)	Light source	Halogen light
	Spectrometer	Mini-spectrometer
	Probe	Optical fiber bundle
Measurement section	Temperature control	Temperature: 10° to 30° recommended (Max. of 15° below ambient)
	Sample injection	By manual operation of injector
	Required sample volume	100 $\mu$ L + $\alpha$ (preferably 300 $\mu$ L in order to prevent air bubbles mixing)
	Flow rate range	10 $\mu$ L/min. to 100 $\mu$ L/min.
	Waste bottle	Volume: 25 mL can be drained out using the connector
Major dimensions	Body dimensions	280 mm (W) $\times$ 435 mm (D) $\times$ 270 mm (H) (not including umbos)
	Body weight	15Kg
	Electric voltage, power consumption	AC100V, 50 Hz/60 Hz 300 VA
	Storage conditions (for device)	0° to 50°, 20% RH to 80% RH, no condensation
	Operating conditions	15° to 35°, 20% RH to 80% RH, no condensation

### Standard accessories

Power cable, USB cable, needle for injection, waste bottle, liquid feeding tube for pump with fitting union, service set (includes 2 sensor chips and 2 flow cells), software installation CD-R, instruction manual, and information about after-sales service.

Installing the software enables the following operations to be performed: measurement-related settings, measurement (tables and records of experimental data), affinity (association and disassociation), and kinetics analysis (association rate constant and disassociation rate constant).

### Option

Syringe pump	Brand	HARVARD
	Product name	EconoFlo Syringe Pump
	Model	70-2205

### Disposables

Sensor chip	Product name	Exclusive sensor chip for MI-Affinity
	Model	LCS-01
	Substrate	Silicon wafer
	Thin film	SiN (Silicon nitride)
	Surface modification	Without modification
Flow cell	Product name	Exclusive flow cell for MI-Affinity
	Model	LCF-01
	Material	PDMS (polydimethylsiloxane)
	Dimensions	25.2 mm max. (D) $\times$ 17.2 mm max. (W) $\times$ 1.0 mm (H)
	Channel dimensions	16.0 mm (D) $\times$ 2.5 mm (W) $\times$ 0.1 mm (H), Vol: 4 $\mu$ L

## Applications

Konica Minolta is working day by day in pursuit of expanding the possibilities of measurement using RfS. We will continue to introduce new results of achievements as well as examples of applications and adaptations aimed at further enrichment of the software applications.

For more information: <http://konicaminolta.jp/pr/rifs>



**Disclaimer**  
This device was designed for use in the measurement and analysis of molecular interactions and related applications, and a great deal of care and consideration went into meeting this goal. Konica Minolta accepts no responsibility or liability whatsoever for any device or equipment damage or other problems occurring due to usage of this equipment. The warranty does not apply to equipment malfunction or error resulting from failure to follow the precautions outlined in the accompanying instruction manual, from unauthorized modification of the equipment, or from usage outside the intended scope and purpose, even if said malfunction or error occurs within the warranty period.

**To ensure safe use of the machine**

- Be sure to read the Instruction Manual thoroughly before use to ensure proper use of the equipment.
- Use the machine with the proper power supply and voltage listed in the Instruction Manual.
- Do not use or install the equipment in locations where it would be subject to high levels of water, humidity, steam, dust, oil, smoke, or other adverse effects.
- Be sure to connect the equipment to earth ground. Device failure and ground leakage may cause electric shock.

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Distributor



Molecular Interaction Measurement Equipment

**Fluidware**  
**MI-Affinity®**  
LCR-01



Expand the possibility of molecular interaction research



Reflection interference is a physical phenomenon that can be observed in the world around us as seen in the colors on an oil slick or soap bubble.

MI-Affinity®

<http://konicaminolta.jp>

The essentials of imaging

Accurate but easy to use with many user-friendly functions.  
Label-free & real-time measurement of molecular interactions.

Fluidware  
**MI-Affinity**<sup>®</sup>  
LCR-01



## Features

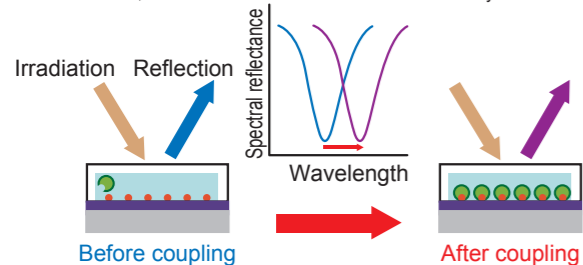
### Versatility in test objects

As well as regular bio-molecules, such as protein, nucleic acid, and carbohydrate, MI-Affinity can be applicable for the molecular interaction measurement of advanced polymer and so on. Dynamic reaction can be monitored in real time without label.

### Measuring principle

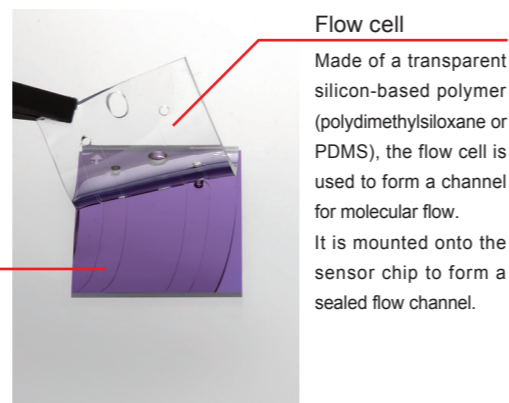
#### RiFS = Reflectometric Interference Spectroscopy

RiFS is based on the interference of reflected white light from thin film with the thickness comparable to the wavelength of light or less. MI-Affinity measures the wavelength of the bottom peak of spectral reflectance. When molecules associate or dissociate in the test area, optical path length changes accordingly, and the measured spectral reflectance changes. That yields the shift of the wavelength of the bottom peak of the spectral reflectance, and the molecular interaction is measured by the shift.



### Unique measuring unit

Separate structure of "Sensor chip": a sample stage and "Flow cell": a channel for molecular flow. Because of the structure, surface of the sensor chip can be modified not only by chemical method such as silane coupling agent, but also physical method such as spin coating. Sensor chip is supplied without surface modification, and can be modified as per user's interest. It has two grooves to be composed as two channels when put on the sensor chip.



### Simple system

The MI-Affinity system is very simple and consists of an equipment body, a PC, and a pump only. The wait time from system power up to system ready status is only about 30 minutes. Measurement operations are also fairly simple, requiring only that the disposables be set in place and a sample be injected into the machine.

#### Step 1



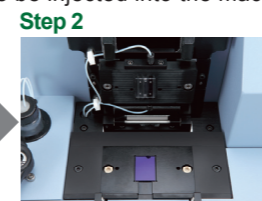
#### Step 2

Connect PC (installed system software) and Syringe pump to MI-Affinity body. Turn on each device to standby.

#### Step 3

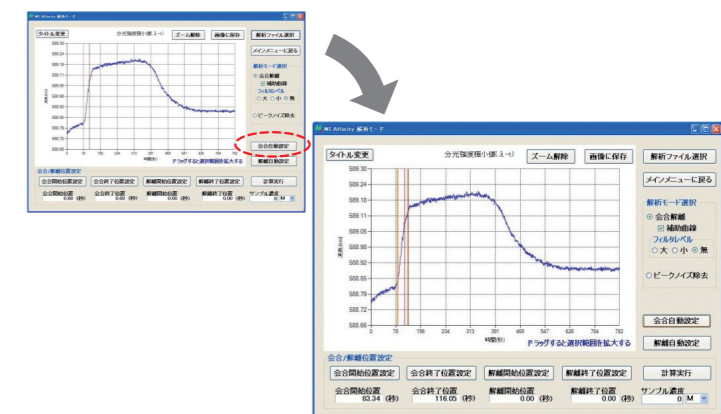
Open shade cover and chip cover, and set then sensor chip and flow cell in right place.

After 20 minutes warm-up of body, check the stability of fluid flow, and start the measurement by just clicking the button. Inject samples according to the desired protocol.



### Easy-to-operate software

Measurement and analysis are conducted using unique specialized software. The easy-to-operate software is designed to allow measurement or analysis to be started with a mere click of the button.

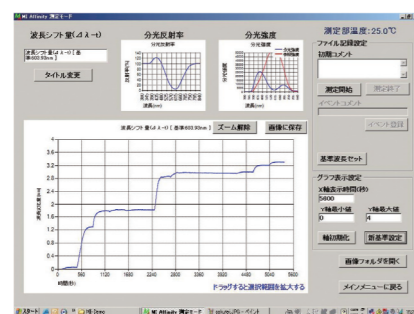


The software will automatically calculate the association start time and end time once a given point on the λ-t diagram is chosen and the "association automatic setting" button is clicked. Dissociation analysis is executed using a similar approach.

## Output information

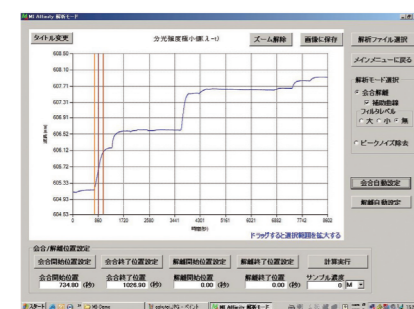
### Measurement

The wavelength shift data is saved in real time in csv file format. Data can be browsed or edited using spreadsheet software or a text editor.



### Analysis

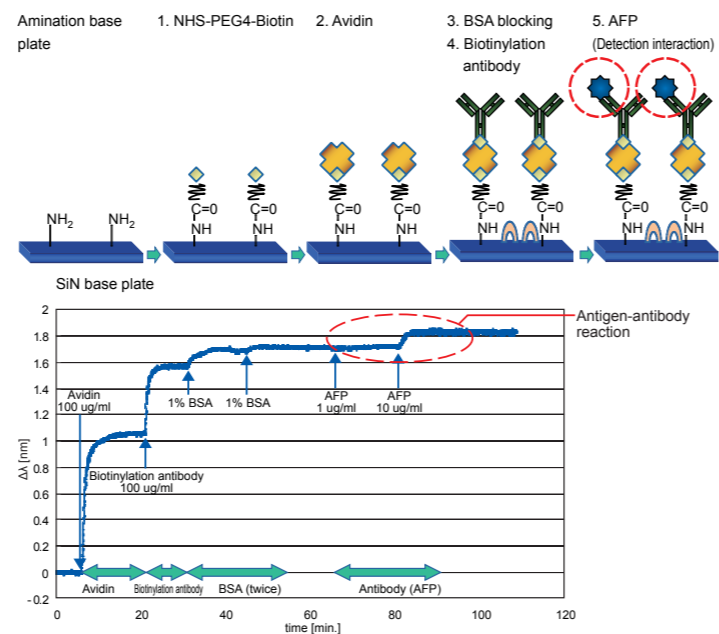
When analysis mode is chosen from the main menu, the following are calculated from the measurement data:  $k_a$ : association rate constant,  $k_d$ : dissociation rate constant,  $K_A$ : association constant, and  $K_D$ : dissociation constant.



**Examples of Applications:** Konica Minolta is working day by day in pursuit of expanding the possibilities of measurement using RiFS. We will continue to introduce new results of achievements as well as examples of applications and adaptations aimed at further enrichment of the software applications. <http://konicaminolta.jp/pr/rifs>

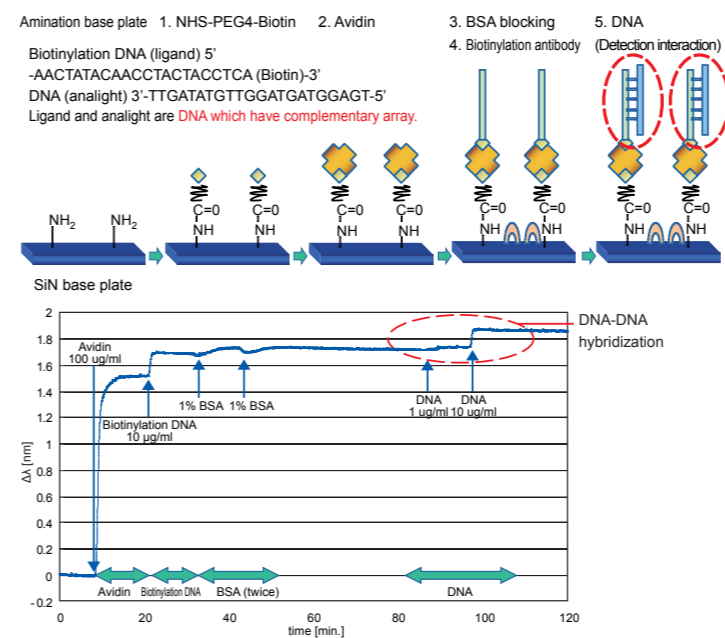
### Antigen-antibody reaction

This is an example of an antigen-antibody reaction produced using a Biotin-modified anti-AFP antibody and AFP. Immobilization of the anti-AFP antibody directly to a substrate without Biotin is also available using other modification methods. Furthermore, kinetics and affinity measurements can also be completed using interaction data. The  $k_a$  (association rate constant),  $k_d$  (dissociation rate constant),  $K_A$  (association constant), and  $K_D$  (dissociation constant) values can be calculated using the analysis modes of the accompanying software.



### DNA-DNA hybridization

Here, an example is shown for detection of DNA-DNA hybridization related to Biotin-modified DNA and DNA with a complementary sequence to the Biotin-modified DNA. Each DNA in this case is ss-DNA with 22-bp, which is comparable in length to the DNA of an "immobilized DNA substrate" or "siRNA" or "miRNA." Nucleic acids with shorter lengths are also available.



### Lectin-carbohydrate interactions

This shows a case of Lectin-carbohydrate interactions by using Biotin-modified Concanavalin A (ConA) and Dextran. ConA, which is known as the thing binding most strongly to Mannose, also has the nature of binding to Glucose, but the binding force is not much strong. In this case the weak interaction of ConA and terminal Dextran-Glucose is measured in real time.

