iMSPR mini

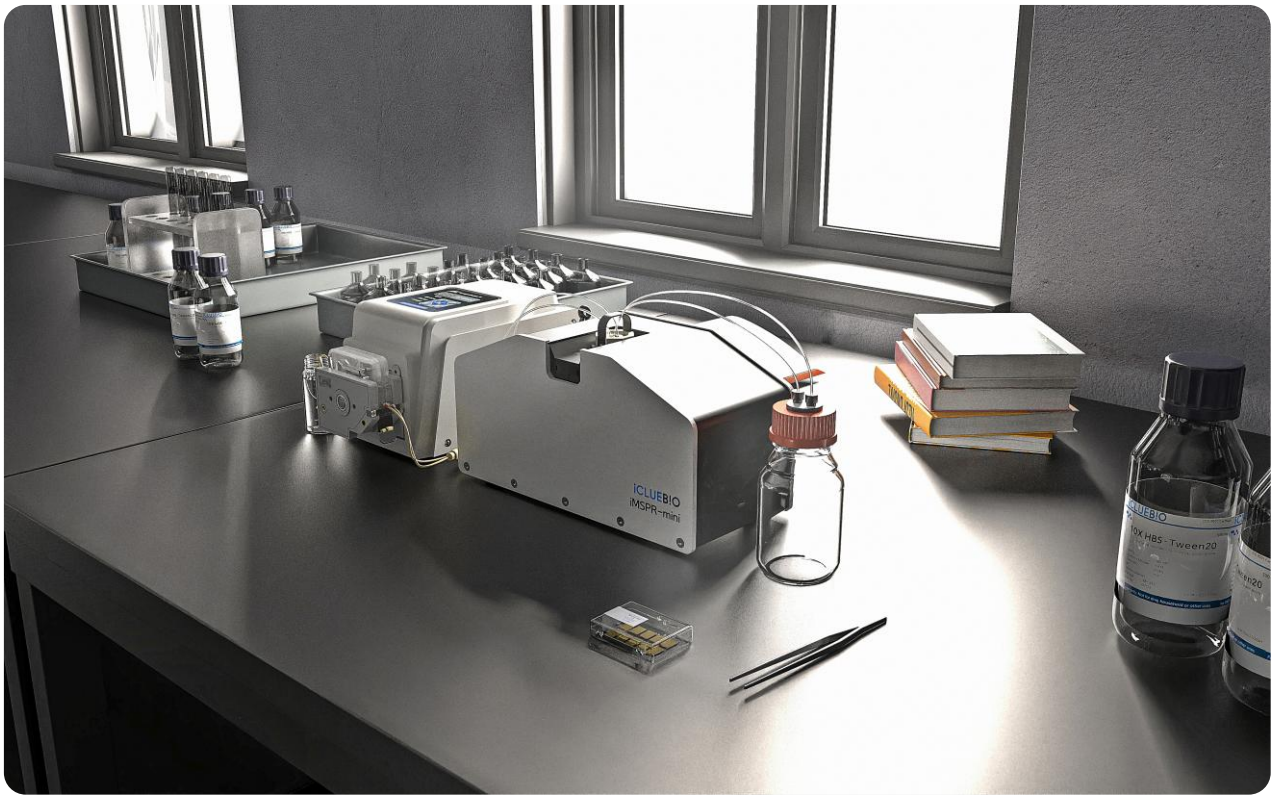
The Most Sustainable Molecular Interaction Analysis system

iCLUEBIO

iMSPR-mini

Contents

The most reasonable label-free interaction analysis

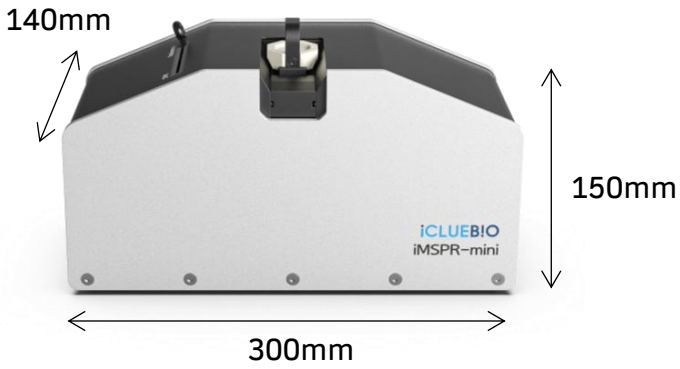


icluebio has been thinking about an SPR sensor that can be used **flexibly for various applications** for researchers, product developers, and medical fields, etc. It should be as small as possible so that it can be **installed anywhere**, it should be **easy to connect** to other systems, and it should be simple so that **anyone can use** it.
This is the reason why the iMSPR-mini was born.
mini is an open platform built to do anything you can imagine. Just connect to your mobile PC via USB and you can use it right away without additional power supply. By using the mini, you can accurately understand the phenomenon of surface plasmon resonance (SPR) and use it intuitively.

From the small but powerful iMSPR-mini
expand your research as much as you want.

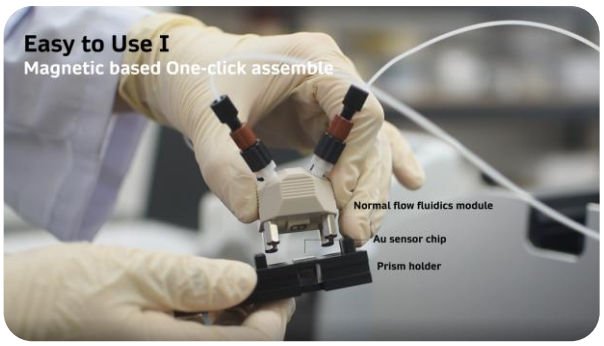
Compact sized,
Incredible SPR system
iMSPR-mini

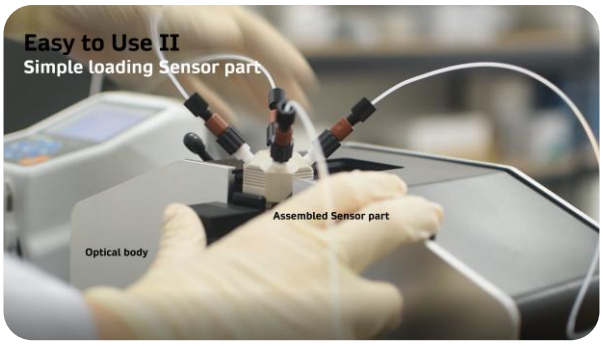
mini is SPR itself. mini is the basis of the iMSPR series. Its optical platform is shared by all iMSPR models, and the signal to noise ratio also shows the same performance. All the core parts of the SPR sensor are integrated in a very compact body, and electronic parts are minimized.



Wherever you want mini does not require power supply using an additional cable. Via a USB connection to a mobile PC, the mini stays awake and measures signals in real time. That means you can take the mini wherever you want and never have to search for a power.

Whoever can access the mini. mini is easy. Magnetic-based fluidics assembly technology makes SPR systems accessible to anyone. After connecting the fluidics module to the prism holder and inserting it into the body of the mini, it is ready to use.





Maximize through connection

Extreme flexibility mini connects to anything you can imagine. With 1/16 inch tubing-based connections, you can develop new biosensors, evaluate kinetics, and use them for drug discovery.

iMSPR-mini basic configuration

This model comprises a fluidic module with two flow cells and a peristaltic pump with two channels. Samples can be injected through each tubing of the pump, and depending on the purpose of the experiment, you can do two independent experiments or set up a control group to conduct the test. With this configuration, it is possible to simply confirm the yes or no binding, perform small-quantity screening, or conduct rough kinetics experiments.

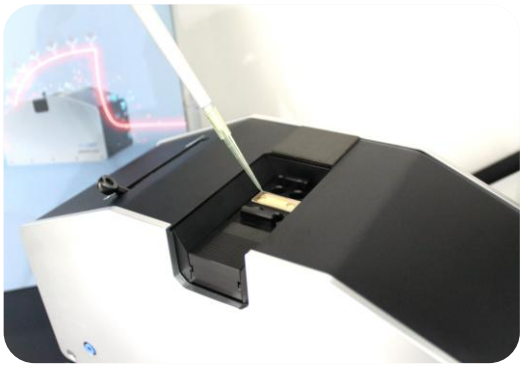
For more accuracy

For more accurate kinetics evaluation, the experiment should be performed more stably, and the diffusion section between the buffer and the sample should be minimized. For that purpose, the iMSPR-mini can be equipped with a degasser, an injection valve, a selection valve and a U-type fluidic module.

For high throughput

When using mini, it is sometimes necessary to analyze a large number of samples differently from the initial plan. Without purchasing a new SPR system, you can analyze a large number of samples at once by attaching icluebio's SPR autosampler to the mini.

Whatever / Wherever you want

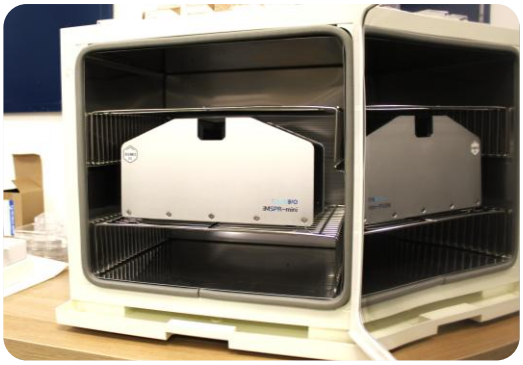


Diagnostic platform device

Based on the mini SPR optic system, you can develop fluidic modules with any design you want according to your purpose. Through this, it is possible to conduct research using real samples such as whole blood. Now, use mini to creatively measure biomarkers for disease diagnosis in the blood.

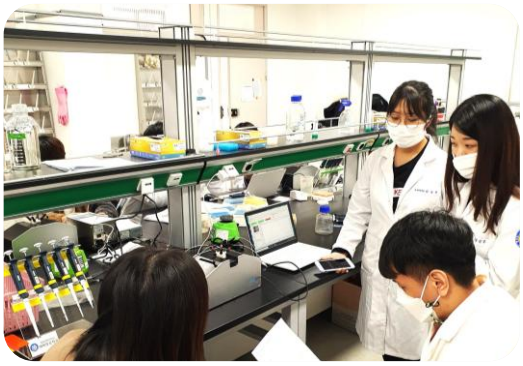
At physiological environment

It is very important to evaluate the binding of your target substance and new drug candidate at 37℃. Simply place the mini in your dry oven and run the experiment in a physiological temperature environment. More information will reduce your trial and error.



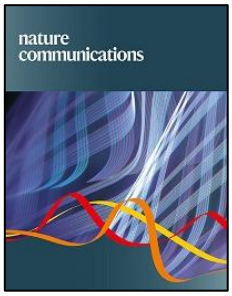
In cooling chamber

If your analytes and immobilized materials are temperature sensitive and have poor temperature stability, you may need to run them in a cooling chamber for long runs. Simply put the mini into the cooling chamber and carry out the experiment with peace of mind. You can proceed with the evaluation without your substance being denatured.



On site education

SPR biosensors are now essential devices rather than optional. In particular, it not only plays a very important role in pharmaceutical development but is also used in the quality control of biopharmaceuticals like antibody therapeutics. mini is designed to understand the principle of SPR, and several units can be installed in a small space.
Install iMSPR-mini in the practice space for your future professional people.



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A Fully-Human Antibody Specifically Targeting a Membrane-Bound Fragment of CADM1 Potentiates the T Cell-Mediated Death of Human Small-Cell Lung Cancer Cells, Int. J. Mol. Sci. 23(13), 2022, 6895

One-step immunoassay for the detection of food poisoning related bacteria using a switching peptide, Analyst, 147, 2022, 5363.

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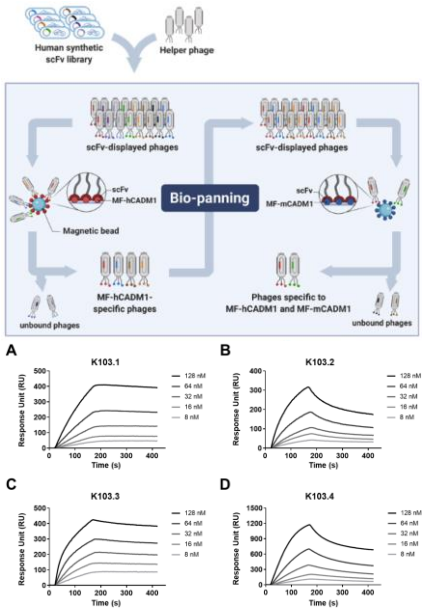
Antibody characterization



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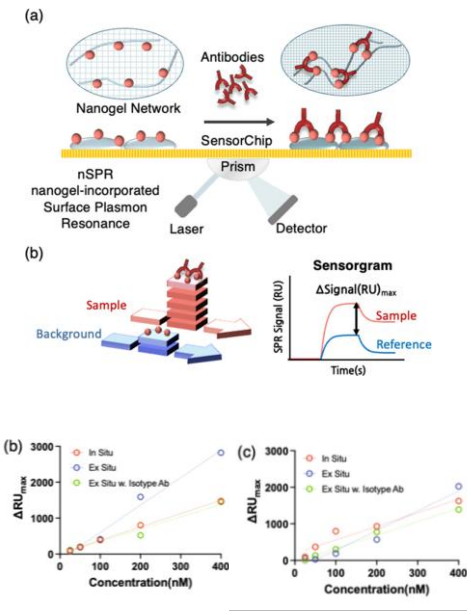
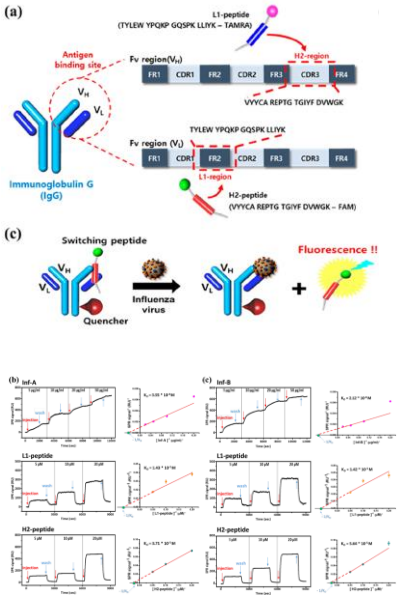
Neutralized Ab detection



ACS Appl. Polym. Mater. 2023, 5, 3, 2195

New assay development



Anal. Chem. 2022, 94, 27, 9627–9635

Specifications

Including	iMSPR-mini main system (1ea), Peristaltic pump with 2 channels (1ea), 2 channels I-type Fluidic module (1ea), Prism holder (1ea), Detach tool (1ea), PC (1ea), Flat tweezer (1ea), Matching oil (3ml), USB cable (1ea)
Warranty	1 years

iMSPR-mini main system	

SPR type	Angular interrogation, Prism coupling
Channels/ Channel volume	2 channels (individual), 500 nl
Light source	770 nm LED
Detector	2D CMOS image sensor, 1/1.8”, 1.3 MP
Polarizer control	Manual
Incident light range	6˚
RIU range	1.32 ~ 1.38
Affinity range	pM ~ mM
Noise level (single channel RMSE)	< 0.5 RU
General analysis time/sample	2~15 min
Main application	Yes/No binding, Rate on/off constants / Equilibrium constant (required evaluation SW), Biosensor development, Academic, Diagnostics
Analytes	Proteins, DNA/RNA, Peptides, Small compounds, Polysaccharides, Lipids, Viruses, Cells
Size	306 x 140 x 156 (mm), 4kg
Power	5V USB3.0
Materials	Aluminum (more 90%), PEEK

Pump	
Pump type	Peristaltic
Pump channel No.	2
Operation tubing	3-stop pharmed tubing, ID: 0.25 mm
Flow speed	0.1~100 rpm
Flow rate range	1 ~ 100 μL/min
Size	232 x 142 x 149 mm, 2.38 kg
Power	AC 100~240V
PC	
CPU	i5
RAM	8G
Operation	Window
Power	AC100~240V
Accessary	 Tracedrawer  Degasser  Injection valve  Autosampler  Peristaltic pump  Selection valve

iMSPR series

The iMSPR series is a real-time monitoring and analysis system for label-free intermolecular binding based on surface plasmon resonance (SPR) phenomenon. Through the iMSPR series, new biosensors, biomarkers, and receptors can be developed, or new drug candidates can be discovered. In addition, it can evaluate pharmaceutical quality and can be used for medical diagnosis. Experience the iMSPR series of various configurations, from the basic manual model iMSPR-mini to the fully automated advanced model iMSPR-Pro2X model.

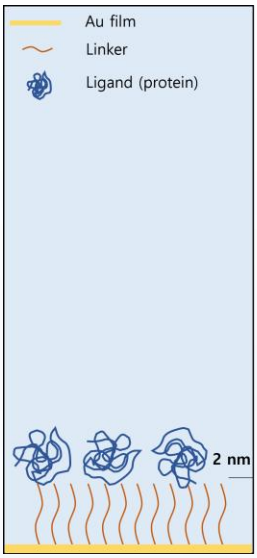
What is your choice of iMSPR series

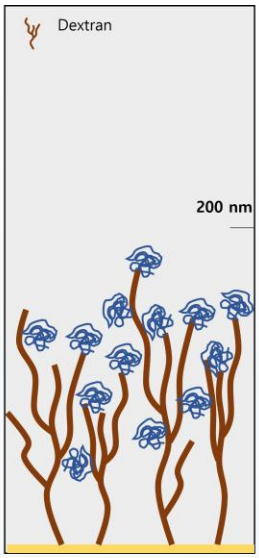


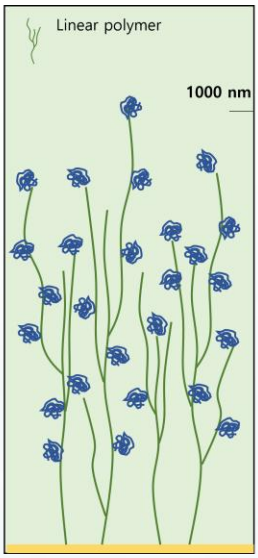
Model name	iMSPR-Pro2X	iMSPR-ProX	iMSPR-mini	iMSPR-PlexM
Cat. No	INPX1000	INPX1000	INMN2000	INPM1000
Channels	4	2	2	1
Channel type	UFD type	U type	I type	H type
Degasser	Built in	Built in	Optional	Optional
Operation guide	Yes	Yes	No	No
Automatic kinetics evaluation	Yes	Yes	No	No
Temperature Control Unit for analysis	Yes	Yes	No	No
Sample injection	Autosampler	Autosampler	Manual injection using pump tubing	Manual injection using syringe
Noise level (single channel RMSE)	< 0.1 RU	< 0.1 RU	< 0.5 RU	< 1 RU
Incident angle range	8	8	6	2
Multiplexing	2	No	No	Max 250
Applications	Drug Screening Concentration affinity Kinetics	Drug Screening Concentration affinity Kinetics	Yes/No Affinity Sensor development	Screening Multiplex analysis Sensor development
GxP operation (21 CFR Part 11)	Yes (optional)	Yes (optional)	No	No
Recommended customers	Common facility Pharmaceutical company	Common facility Pharmaceutical company	Personal lab of university/ Research center	Personal lab of university/ Research center

Sensor chips guide

icluebio sensor chips are designed to be applied to a variety of applications. We offer a wide range of sensor chip surfaces - types, functional groups, densities and thicknesses. The surface of the sensor chip has to be determined the type of analyte, the size of the analyte, the ligand immobilization method, non-specific adsorption, etc.







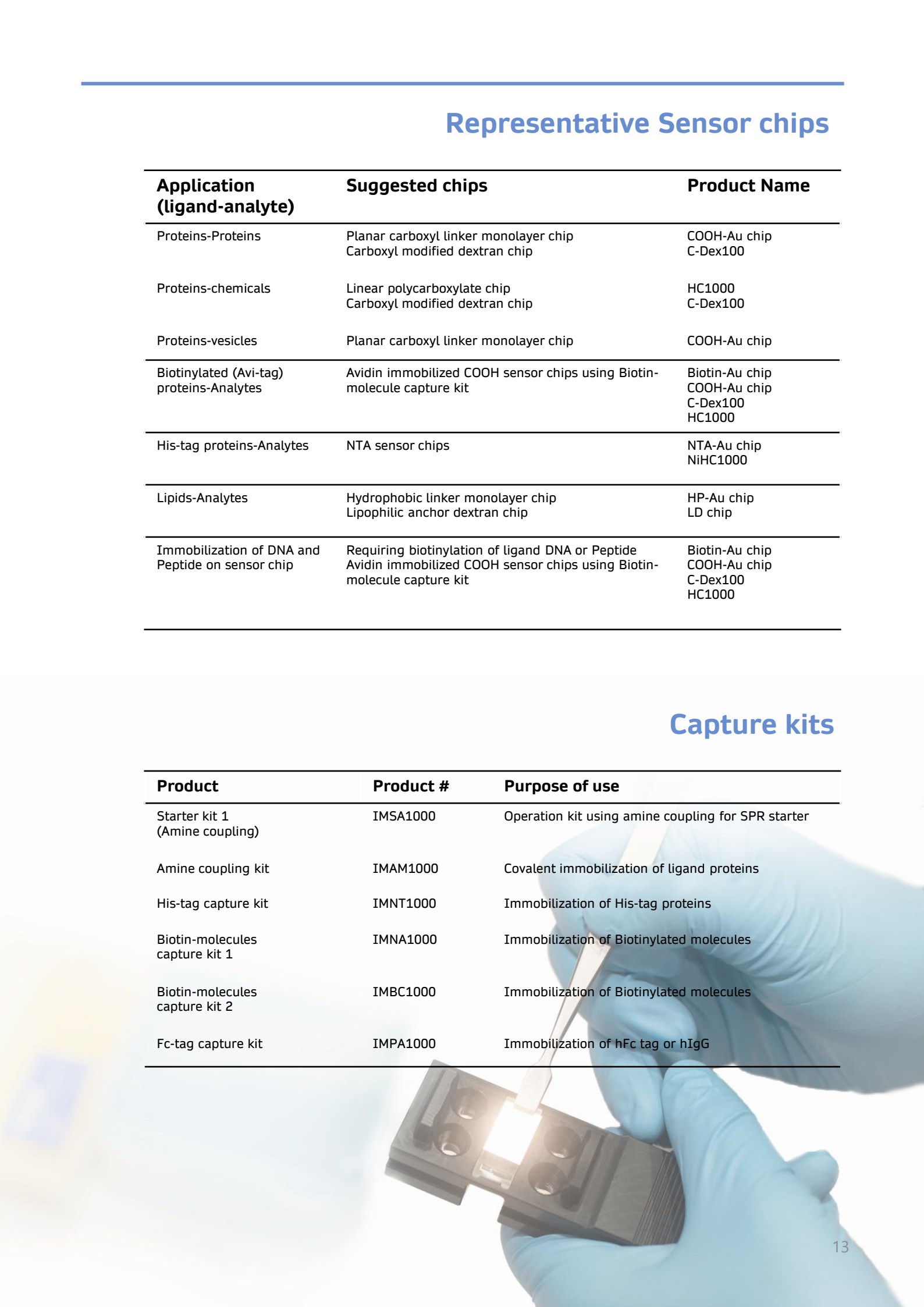
	2D surface	3D-Dextran	3D-Linear hydrogel
Linker	Self-assembled monolayer	Dextran	Linear polymer
Thickness	< 10 nm	100 nm	> 100 nm
Functional group	Bare, COOH, Biotin, NTA	COOH, Protein A/G	COOH, NTA
Glass Size	14x10x0.33 mm	14x10x0.33 mm	12x12x0.33 mm
Glass material	BK7	BK7	BK7
Adhesive	Cr	Cr	Cr
Metal layer	Au	Au	Au
Linker material	Alkan-thiols	Dextran	Linear polymer
Immobilization level	Low	High	High +
Non-specific adsorption	Moderate	Low	Low

Representative Sensor chips

Application (ligand-analyte)	Suggested chips	Product Name
Proteins-Proteins	Planar carboxyl linker monolayer chip Carboxyl modified dextran chip	COOH-Au chip C-Dex100
Proteins-chemicals	Linear polycarboxylate chip Carboxyl modified dextran chip	HC1000 C-Dex100
Proteins-vesicles	Planar carboxyl linker monolayer chip	COOH-Au chip
Biotinylated (Avi-tag) proteins-Analytes	Avidin immobilized COOH sensor chips using Biotin-molecule capture kit	Biotin-Au chip COOH-Au chip C-Dex100 HC1000
His-tag proteins-Analytes	NTA sensor chips	NTA-Au chip NiHC1000
Lipids-Analytes	Hydrophobic linker monolayer chip Lipophilic anchor dextran chip	HP-Au chip LD chip
Immobilization of DNA and Peptide on sensor chip	Requiring biotinylation of ligand DNA or Peptide Avidin immobilized COOH sensor chips using Biotin-molecule capture kit	Biotin-Au chip COOH-Au chip C-Dex100 HC1000

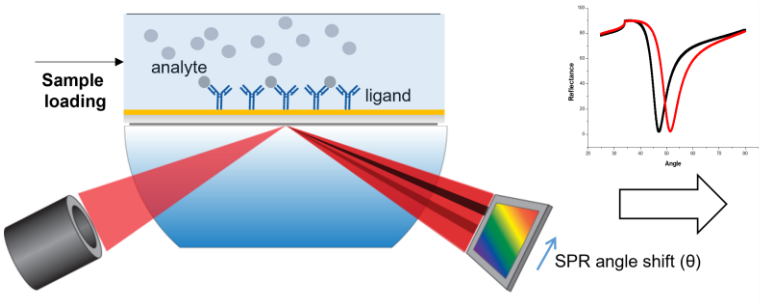
Capture kits

Product	Product #	Purpose of use
Starter kit 1 (Amine coupling)	IMSA1000	Operation kit using amine coupling for SPR starter
Amine coupling kit	IMAM1000	Covalent immobilization of ligand proteins
His-tag capture kit	IMNT1000	Immobilization of His-tag proteins
Biotin-molecules capture kit 1	IMNA1000	Immobilization of Biotinylated molecules
Biotin-molecules capture kit 2	IMBC1000	Immobilization of Biotinylated molecules
Fc-tag capture kit	IMPA1000	Immobilization of hFc tag or hIgG

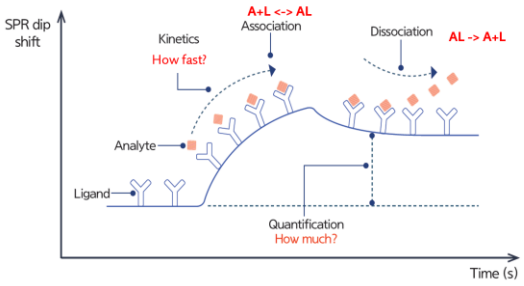


What is SPR

Surface Plasmon Resonance (SPR) is a phenomenon in which the reflected light disappears at a specific angle of incidence when light is incident on the side of the prism on which the gold thin film is placed. SPR biosensor is a powerful technique to measure biomolecular interactions in real-time without labeling materials. When biomolecules bind on the sensor chip, the surface refractive index changes and the angle of the reflected light shifts. Molecular interaction is monitored by acquiring sensorgrams that record this angle change in real time.



Sample loading & SPR angle shift



Sensorgram by SPR angle shift in real-time

How can monitor the interaction

1. The phenomenon that the reflected light disappears at a specific angle of incidence: **SPR angle**
2. The **SPR angle shifts** when the surface refractive index changes due to biomolecule bonding on the sensor chip.
3. The **sensorgram is acquired** by recording SPR angles in real-time
4. **Monitoring of intermolecular binding** through sensorgram

What are the uses of iMSPR

Biomolecular interaction analysis is not limited to proteins. The interactions between hybrid systems of DNA-DNA, DNA-protein, lipid-protein, small compound-protein and biomolecules and non-biological surfaces can be investigated.

iMSPR is used

•To **identify the binding** of two or more interactants to each other

•To find (**screening**) candidates from lots of molecules

•To determine the **affinity (K_D)** of the interactions

•To evaluate the actual **association (k_a) and dissociation rates (k_d)**

•To **quantify the concentration** of analyte in sample solution

•To analysis **thermodynamics**: **H, S**

Applications

Sample type	Proteins DNA/RNA Peptides Small compounds Polysaccharides Lipids Viruses Cells
Application	Yes/No binding Ranking, Screening Affinity (Equilibrium constants, K_D) Kinetics (Rate constants, k_a, k_d) Dissociation rate (residence time) Inhibition Quantification
Applicable fields	Drug discovery Drug quality control Immuno-Oncology drug Small compounds Protac Antibody therapeutics Antibody Drug conjugations (ADCs) Bispecific antibody Epitope mapping Immunogenicity Immunoassay based diagnostics

icluebio

icluebio was founded in Seoul, South Korea in 2017. Our mission is to create sustainable, well-balanced tools in terms of performance and cost that can impress customers and discover clues to life phenomena that can benefit mankind. Currently, we are devoting all our capabilities and passion to the Surface Plasmon Resonance-based analysis system, which enables simple, real-time observation of intermolecular bonds without labeling. We will do our best to be sustainable for products, people, company, and the earth.

iCLUEBIO

www.icluebio.com

icluebio's iMSPR series is manufactured in Korea and is finally delivered to the customer through precise quality inspection by a specialist. The device experts directly deliver, install free of charge, and perform IQ/OQ right on the spot. After all on-site tests are completed, you will receive training in operation from the education experts in the contents of the handbook.

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