

iCLUEB!O

# iMSPR

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The most reasonable SPR system, nearby you



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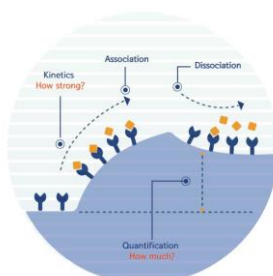
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## iMSPR series

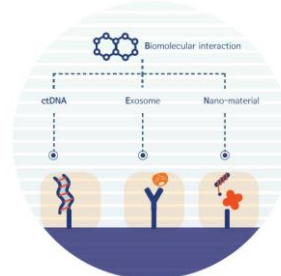
The iMSPR series is a real-time monitoring and analysis system for label-free intermolecular binding based on surface plasmon resonance (SPR) phenomenon. Through the iMSPR series, new biosensors, biomarkers, and receptors can be developed, or new drug candidates can be discovered. In addition, it can 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-ProX model.



Prism couple type

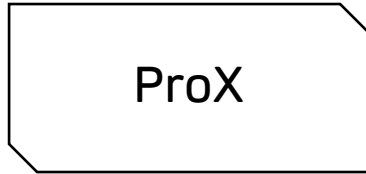


Rate/Equilibrium

Protein, Peptide,  
DNA, Chemicals, Cells

## iMSPR models

Model name	iMSPR-ProX	iMSPR-Pro	iMSPR-mini	iMSPR-Lab
Cat. No	INPX1000	INPR1000	INMN3000	INLB1000
Channels	2	2	2	2
Channel type	U type (connected)	U type (connected)	I type (individual)	I type (individual)
Degasser	Built in	Built in	No	No
Operation guide	Yes	Yes	No	No
Automatic kinetics evaluation	Yes	Yes	No	Not including
Thermodynamics	Yes (optional)	Yes (optional)	No	No
Sample injection	Autosampler	Manual injection using syringe	Manual injection using pump tubing	Manual injection using pump tubing
Noise level (single channel)	0.1 RU	0.1 RU	0.1 RU	0.1 RU
Incident angle range	6	6	6	40
Incident angle change	No	No	No	Yes
Applications	Drug Screening Concentration/affinity Kinetics	Yes/No Affinity Kinetics	Yes/No Affinity Sensor development	Sensor development Gas sensing Film/solvent
GxP operation (21 CFR Part 11)	Yes (optional)	Yes (optional)	No	No
Recommended customers	Common facility Pharmaceutical company	Personal lab of university/ Research center	Personal lab of university/ Research center	Personal lab of university/ Research center




iMSPR-ProX model is a fully automatic SPR system with auto sampler. This device is not simply equipped with an autosampler, but is a real sample-to-answer system that derives kinetics evaluation results by preparing samples to be analyzed in the autosampler.

ProX can install two 96-well plates at a time, enabling large-capacity screening of candidate drugs, which is the initial stage of new drug development.

Now you can dedicate your analysis to the fully automated ProX and spend your time doing more important things.

Including	iMSPR-ProX main system (1ea), Autosampler (1ea), 48 vials rack (1ea), 2 channels U-type Fluidics module (1ea), Prism holder (1ea), Detach tool (1ea), PC (1ea), Tracedrawer SW (1cp) Flat tweezer (1ea), Matching oil (3ml), USB cable (1ea) Sensor chip storage kit (1ea)
Warranty	1 years

iMSPR-ProX main system	
SPR type	Angular interrogation, Prism coupling
Channels/ Channel volume	Channel 1: Ligand channel, Channel 2: Reference channel Channel 2-1 (Connected mode), 500 nL
Light source	770 nm LED
Detector	2D CMOS image sensor, 1/1.8", 1.3MP
Polarizer control	Auto
Incident light range	6°
RIU range	1.31 ~ 1.37
Association ( $k_a$ )/Dissociation ( $k_d$ )/Affinity range( $K_D$ )	$10^3$ to $10^7$ M <sup>-1</sup> s <sup>-1</sup> / $10^{-5}$ to $1$ s <sup>-1</sup> / $10^{-3}$ to $10^{-12}$ M
Noise level (single channel)	0.1 RU
General analysis time/sample	2~15 min
Main application	Yes/No binding, Rate on/off constants / Equilibrium constant Drug screening (discovery), Pharmaceutical QC, Thermodynamics (optional)
Analytes	Proteins, DNA/RNA, Peptides, Small compounds, Polysaccharides, Lipids, Viruses, Cells
Temperature range (TCU built-in model)	±10°C of ambient temperature
Size	360 x 466 x 262 (mm), 18kg
Power	AC100-240V
Materials	Aluminum (more 90%), PEEK

Pump type	Peristaltic
Pump channel No.	1
Operation tubing	3-stop pharmed tubing, ID: 0.25 mm
Flow rate range	10~100 uL/min
Selection valve type	Solenoid
Degasser volume	100 uL

#### Autosampler



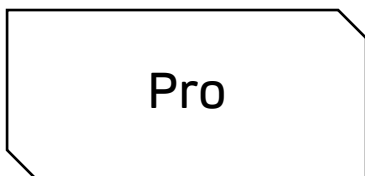
Capacity	48 vials x 2 96 well plate x2
Pump type, volume	Syringe, 500 uL
Injection valve, loop volume	6 ports - 2 ways, 200 uL (option 100, 1000 uL)
Injection volume	1 (more 20 uL recommended) to 200 uL (maximum volume depend on loop volume)
Required sample volume	Normal mode: Injection volume + 30 uL Air gap mode: Injection volume +75 uL
Prime, cleaning type	Auto
Sample loading type	Normal & Air gap mode
Sample storage temperature (TCU built in model)	4°C below ambient temperature
Power	100-240V
Communication	RS232
Size	300 x 575 x 360 (mm), 21kg
Vials	t-LABs; 9-425 2 mL screw thread Autosampler glass Vial t-LABs; screw cap with 9mm PTFE/Silicone septa Scilab; 2 mL snap top glass Vial Scilab; snap-top PTFE/Sil 11mm septa Wheaton; Snap-/Crimp-Top pp Vial, 0.5~1 mL

#### PC



CPU	i5 or Ryzen5
RAM	16G
Operation	Window
Power	AC100~240V

iMSPR-ProX is capable of supporting operation in GXP and 21 CFR Part 11 in compliance with regulatory demands.



Pump, bubble eliminator, fluidic module, valve, injector, and SPR sensor are all included in one system to improve user convenience and obtain more precise and reproducible data. Now, according to the program experiment guide provided by icluebio, you can sequentially initialize the experiment, check that the sensor chip is properly installed, and perform interval calibration. After setting the ligand molecule immobilization step and the sequence of the analyte binding experiment, all you need to do is insert one by one the sample into the sample inlet according to the instructions of the program guide. The acquired data can be automatically evaluated through the built-in rate/equilibrium constant analysis program. Now perform more precise and reproducible binding analysis with the automated iMSPR-Pro.

Including	iMSPR-Pro main system (1ea), 2 channels U-type Fluidics module (1ea), Prism holder (1ea), Detach tool (1ea), PC (1ea), Tracedrawer SW (1cp) Flat tweezer (1ea), Matching oil (3ml), USB cable (1ea)
Warranty	1 years

iMSPR-Pro main system	
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SPR type	Angular interrogation, Prism coupling
Channels/ Channel volume	Channel 1: Ligand channel, Channel 2: Reference channel Channel 2-1 (Connected mode), 500 nL
Light source	770 nm LED
Detector	2D CMOS image sensor, 1/1.8", 1.3MP
Polarizer control	Auto
Incident light range	6°
RIU range	1.31 ~ 1.37
Association ( $k_a$ )/Dissociation ( $k_d$ )/Affinity range( $K_D$ )	$10^3$ to $10^7$ M <sup>-1</sup> s <sup>-1</sup> / $10^{-5}$ to $1$ s <sup>-1</sup> / $10^{-3}$ to $10^{-12}$ M
Noise level (single channel)	0.1 RU
General analysis time/sample	2~15 min
Main application	Yes/No binding, Rate on/off constants / Equilibrium constant Drug screening (discovery), Pharmaceutical QC, Thermodynamics (optional)
Analytes	Proteins, DNA/RNA, Peptides, Small compounds, Polysaccharides, Lipids, Viruses, Cells
Temperature range (TCU built-in model)	±10°C of ambient temperature
Size	360 x 466 x 262 (mm), 18kg
Power	AC100-240V
Materials	Aluminum (more 90%), PEEK

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Pump type	Peristaltic
Pump channel No.	1
Operation tubing	3-stop pharmed tubing, ID: 0.25 mm
Flow rate range	1~100 uL/min
Injection valve, loop volume	6 ports - 2 ways, 200 uL (option 100, 1000 uL)
Injection volume	1 (more 20 uL recommended) to 200 uL (maximum volume depend on loop volume)
Required sample volume	Injection volume + 30 uL
Selection valve type	Solenoid
Degasser volume	100 uL

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PC




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CPU	i5 or Ryzen5
RAM	8G
Operation	Window
Power	AC100~240V

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iMSPR-Pro is capable of supporting operation in GXP and 21 CFR Part 11 in compliance with regulatory demands.



icluebio thought about the SPR sensor that can be used flexibly for various applications that researchers, product developers, and medical fields want to implement. 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 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. With mini, you can accurately understand surface plasmon resonance phenomena and use it intuitively.

Unleash the research you want to do with the small but powerful iMSPR-mini.

Including	iMSPR-mini main system (1ea), Peristaltic pump with 2 channels (1ea), 2 channels I-type Fluidics 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	1.31 ~ 1.37
Affinity range	pM ~ mM
Noise level (single channel)	0.1 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



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Pump



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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 uL/min
Size	232 x 142 x 149 mm, 2.38 kg
Power	AC 100~240V

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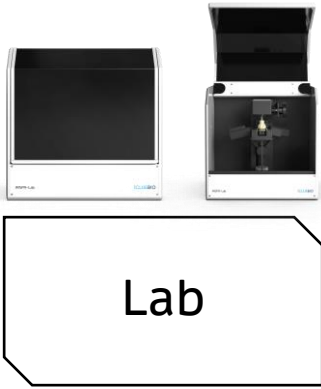
PC



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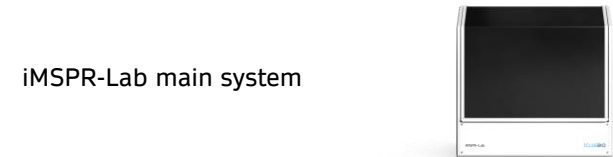
CPU	i5 or Ryzen5
RAM	8G
Operation	Window
Power	AC100~240V

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SPR sensors have been used in a wide variety of fields over the past few decades, not just in the bio fields. The iMSPR-Lab is a variable incidence-center angle device that can be used in the widest range of applications. It is the only model in the iMSPR series capable of gas sensing and can be used for research on films with high refractive index. Of course, you can basically monitor the binding between biomaterials that iMSPR-mini can do. Conduct your various research using the versatile model iMSPR-Lab.

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



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°
Incident center angle range	38 ~ 78°
RIU range	1.00 ~ 1.4x
Affinity range	pM ~ mM
Noise level (single channel)	0.1 RU
Main application	2~15 min
Main application	Yes/No binding, Rate on/off constants / Equilibrium constant (required evaluation SW), Biosensor development, Academic, Diagnostics, Polymer film, Gas sensor
Analytes	Gas, Proteins, DNA/RNA, Peptides, Small compounds, Polysaccharides, Lipids, Viruses, Cells
Power	AC 100~240V
Materials	Aluminum (more 90%), PEEK

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Pump



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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 uL/min
Size	232 x 142 x 149 mm, 2.38 kg
Power	AC 100~240V

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PC



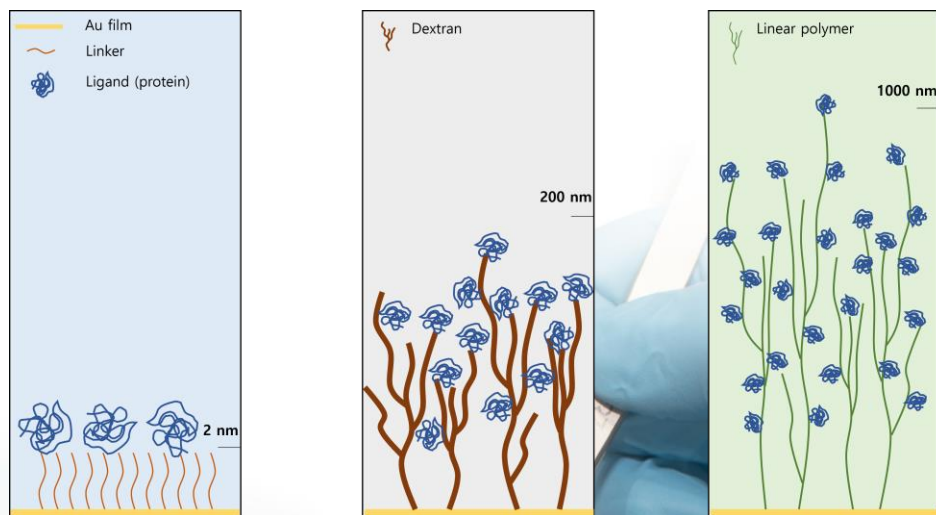
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CPU	i5 or Ryzen5
RAM	8G
Operation	Window
Power	AC100~240V

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## iMSPR sensor chips

icluebio is 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 have to be determined the type of analyte, the size of the analyte, the ligand immobilization method, non-specific adsorption, etc.



	2D	3D-Dextran	3D-Linear hydrogel
Linker	Self assembly monolayer	Dextran	Linear polymer
Thickness	< 10 nm	100 nm	1000 nm
Functional group	Bare, COOH, Biotin, NTA	COOH, NTA, Avidin	COOH, NTA, Avidin
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	< 2000 RU	< 20,000 RU	< 30,000 RU
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 (Avidin) proteins-Analytes	Neutravidin immobilized sensor chips	Avidin-Au chip A-Dex100 NAHC1000
Histag 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 Neutravidin immobilized sensor chip	Avidin-Au chip A-Dex100 NAHC1000

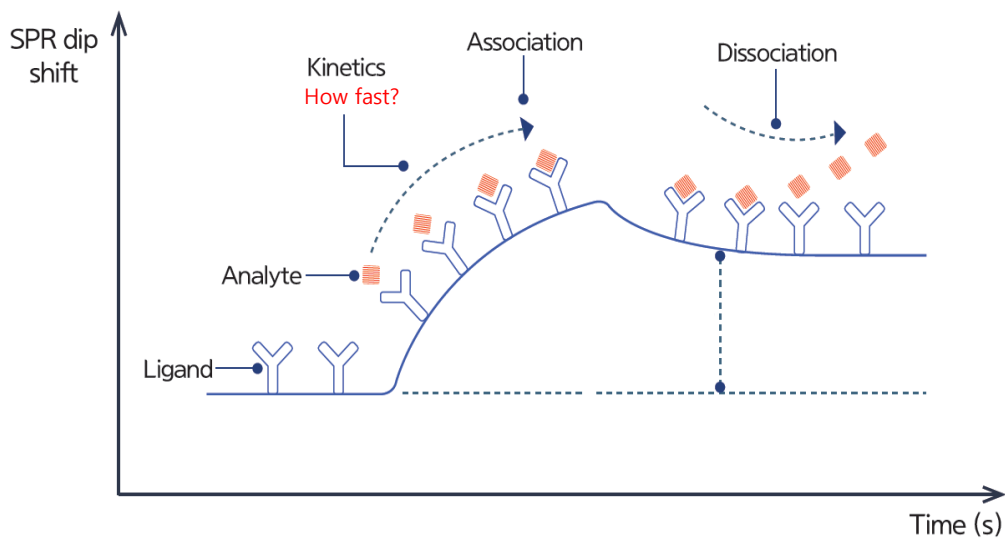
## Reagent kits

Product	Product #	Purpose of use
Starter kit (amine coupling)	IMSA1000	Operation kit for SPR starter
Amine coupling kit	IMAM1000	Covalent immobilization of ligand proteins
Histag capture kit	IMNT1000	Immobilization of Histag proteins
Biotinylated molecule capture kit	IMNA1000	Immobilization of Biotinylated molecules
Human IgG capture kit	IMPA1000	Immobilization of hFc tag or hIgG

# Surface Plasmon Resonance Biosensor

Label free & Real-time monitoring

**Surface Plasmon Resonance (SPR) biosensor** is a powerful technique to measure biomolecular interactions in **real-time without labeling materials**. While the ligand molecules (L) are immobilized to the sensor surface, the analytes (A) are free in solution and passed over the surface. The tendency for A to **associate and dissociate** to L can be observed in real-time through SPR biosensor, and the acquired graph is called a **sensorgram**.



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

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

## Applications of iMSPR

Sample type	Proteins DNA/RNA Peptides Small compounds Polysaccharides Lipids Viruses Cells
Application	Yes/No binding Ranking, Screening Affinity (Equilibrium constants, KD) Kinetics (Rate constants, Ka, Kd) 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

iCLUBIO was founded in 2017 in Seoul, Korea by Alex Jang. It is our mission to create the best tools that can impress customers and discover clues to life phenomena that can be helpful to mankind. Currently, we are putting all our capabilities and passion into an analysis system based on Surface Plasmon Resonance that can observe intermolecular bonds in real time without labeling. icluebio aims to develop, create, and provide innovative but honest and robust but precise tools that can analyze intermolecular bonds more conveniently and accurately. And we hope that you will be moved and surprised.



**[www.icluebio.com](http://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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