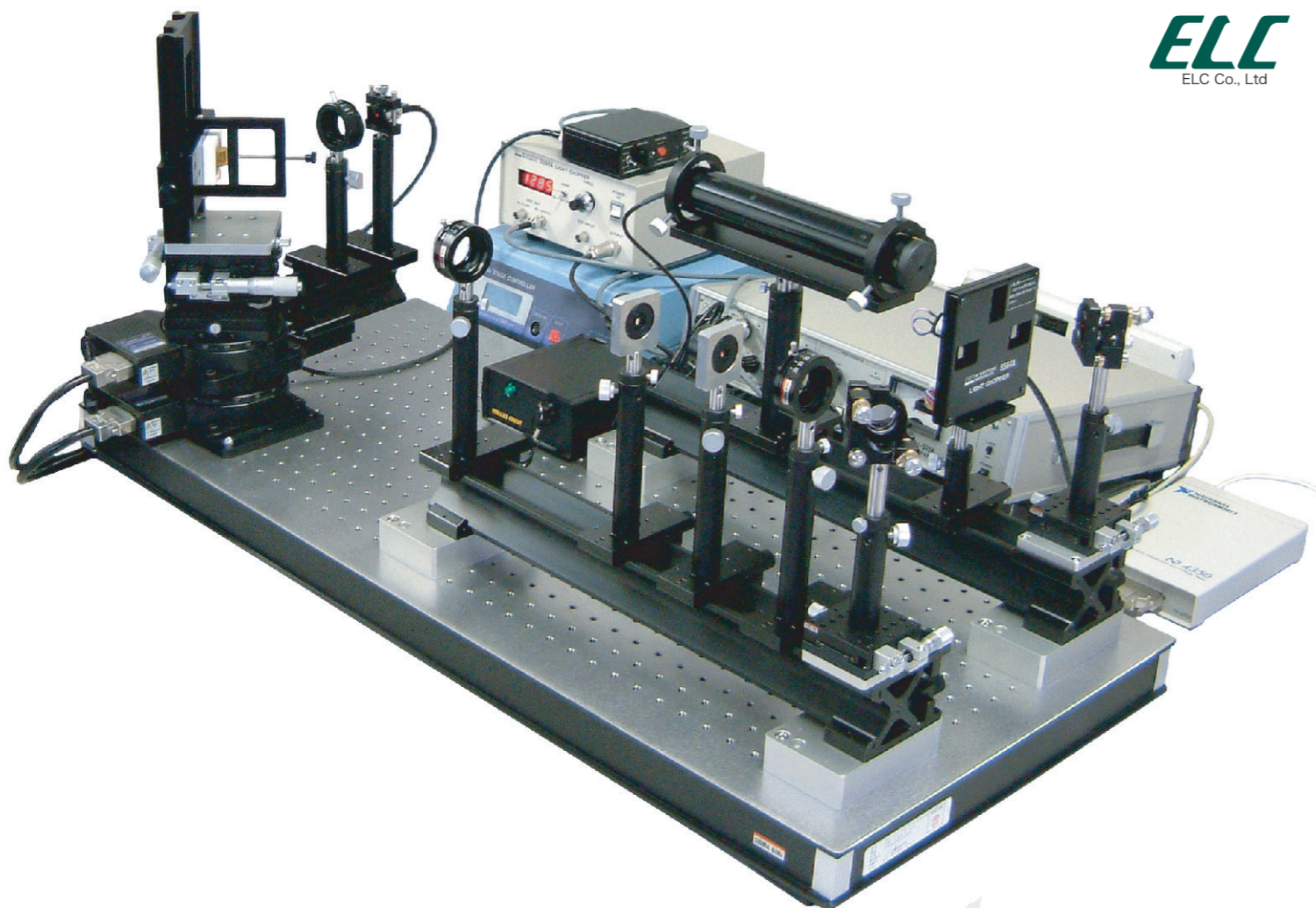


# Surface Plasmon Resonance Spectrometer



The Surface Plasmon Resonance (SPR) Spectrometer, developed in collaboration with Prof. Wolfgang Knoll with Max Planck Institute for Polymer Research (MPI-P) in Germany, allows users to perform a highly sensitive non-label analysis for the interaction of organic molecules (biological molecules etc.) on a surface in real time by utilizing the surface plasmon resonance phenomena. We would sincerely appreciate your consideration of our SPR system for your research uses in the cutting-edge nanotechnology field.

## Principle Use

Direct measurement of interaction between DNA/RNA, protein(antigen-antibody), sugar and cells Analysis of adsorption rate and determination of bonding amount and coupling constant.

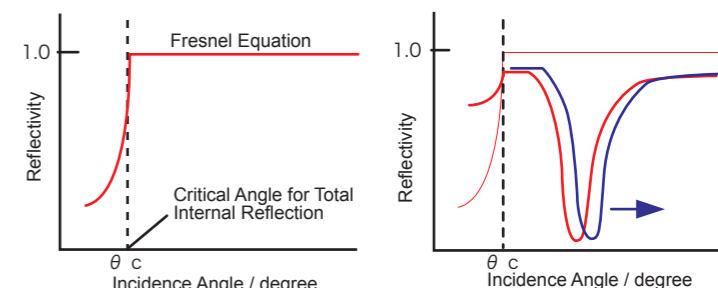
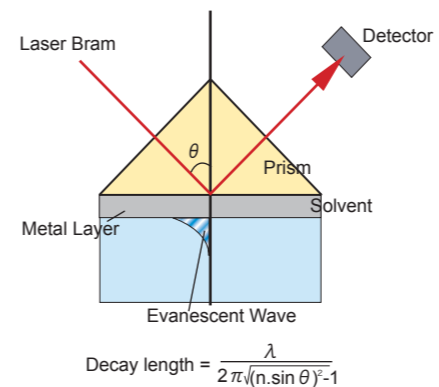
## Features

- ◎ Label free (no need to use fluorescent dye labeling)
- ◎ Real-time kinetic analysis of adsorption and desorption phenomena
- ◎ Flexible system configuration allowing users to customize attachments (electrochemical cell, CCD camera, temperature control, etc.) to meet the research usage.
- ◎ Measurement software using LabView™

## Surface Plasmon Resonance: Optical Principle

When the incoming light is reflected on the interface of about 50nm thick metal layer through a prism, at a certain angle of incidence in total internal reflection, the characteristic light absorption (attenuation of reflected light) can be observed. This is the Surface Plasmon Resonance (SPR) phenomena. It is very sensitive to the change of reflective index of the media, i.e. molecular adsorption to the metal interface in the evanescent light distance, and monitoring the change allows high-sensitivity measurement of molecular-adsorption movement on surface.

The irradiated light on the backside is totally reflected and generates the weak energy wave (evanescent wave) on the metal layer side, then the interaction between the materials induced on the sensor-chip surface differ the dielectric constant and influence the surface plasmon. Thus, we can recognize the interaction between the materials as a change of resonance.



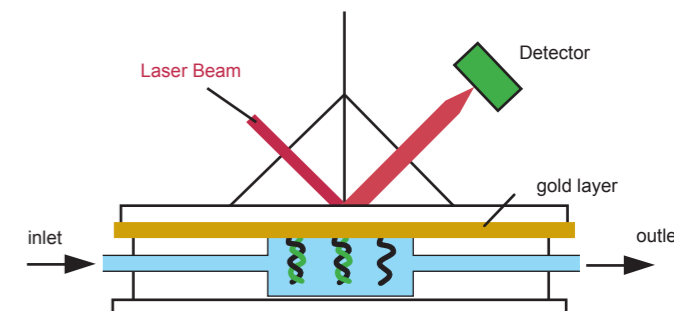
## Measurement Modes

### Angle Scan Mode

The system sweeps the angle of incidence and monitors the reflected intensity with  $\theta$ - $2\theta$  goniometer. Angle scan mode allows users to determinate the adsorption quantity of molecules.

### Kinetics Mode

The system fixes the angle of incidence and measures the reflected light intensity as a function of time. Kinetics mode allows users to monitor the adsorption/desorption process of molecules in real time.



### ◎ Configuration

- Basic SPR optical system size (100 x 450 x 50H)
- $\theta$ - $2\theta$  goniometer (stepping motor drive)
- He-Ne laser
- Actinometer
- Chopper and Lock-in amplifier
- Attenuator
- Sample holder (holder and LaSFN9 prism)
- PC and Software

### ◎ Option \*For more information, please contact us.

- Liquid-flow system
- Temperature control system
- SPR microscope
- Fluorescence microscopy
- Fluorescence spectroscopy
- Grating-coupling SPR etc.

### ◎ Specifications

- Resolution: Angle resolution  $\leq 0.0025^\circ$   
Time resolution  $\leq 0.1$  sec.
- Reflectance sensitivity:  $\leq 0.1\%$
- Measurement mode
  - Angle scan mode  
Measurement range: incidence angle of  $10^\circ$  to  $90^\circ$   
Optical sensitivity of film-thickness :  $\leq 1\text{\AA}$
  - Kinetics mode  
Reflectance sensitivity  $\leq 0.1\%$   
Time resolution  $\leq 0.1$  sec.
- Extensibility:
  - Open unit allows users to customize attachments to meet the research usage

\*Please feel free to inquire us of the details.  
\*Specifications are subject to change without notice for performance improvement.

Manufacturer  
**ELC Co., Ltd.**  
 202 Parkside Ninomiya  
 1-16-9 Ninomiya, Tsukuba  
 Ibaraki 305-0511 Japan  
 Phone: +81-29-852-0511  
 Fax : +81-29-860-2077

Distributor  
**R-DEC Co., Ltd.**  
 1-16-10 Ninomiya, Tsukuba  
 Ibaraki 305-0051 Japan  
 Phone: +81-29-858-0211  
 Fax : +81-29-855-9877