Specifications

Surface Plasmon Resonance Systems
Label-free Interaction Analysis

Reichert SPR
SR7500DC Dual Channel Surface Plasmon Resonance System
Pushing the limits of detection and sensitivity in protein interaction analysis

Explore critical interactions with the top of the line SR7500DC SPR System.

Typical Kinetic and Equilibrium Constant Ranges

Baseline Drift < 0.01 µRIU/min

Minimum Molecular Weight Detection < 100 Daltons

Electrical

Temperature Range 10°C below ambient to 70°C

Flow Cell Volume per Channel 0.18

Sample Capacity Any combination of up to 2 trays can be used. Choose: 12 (10 mL) or 48 (2 mL) Vials; or 96-well (high or low) or 384-well Plates

Sample Loading
Autosampler or semi-automatic injector, standard HPLC tubing and

Refractive Index Range 1.33 to 1.40 (@780nm)

SR7500DC Dual Channel Surface Plasmon Resonance System

High Quality and Precision

• Temperature control from 10°C below ambient to 70°C
• High sample capacity (up to 768 samples)
• Affinity measurements ranging from extremely weak (1 mM) to extremely strong (1 pM)
• Accurate concentration analysis
• Determining kinetics and affinities for a variety of compounds (<100 Da)

Software

Autolink, Reichert’s SPR System Software

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Explore critical interactions with the top of the line SR7500DC SPR System.
Specifications

**Surface Plasmon Resonance Systems**

Label-free Interaction Analysis

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**SR7500DC Dual Channel Surface Plasmon Resonance System**

Pushing the limits of detection and sensitivity in protein interaction analysis

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Explore critical interactions with the top-of-the-line SR75000DC SPR System from Reichert Technologies.

**Features**

- **High Quality and Precision**
  - Sophisticated, intuitive software with 21 CFR Part 11 Technical Controls
  - Fast data sampling rates (up to 10 Hz)
  - Low life cycle costs
  - Rigorous kinetics analysis (association/on rate and dissociation/off rate)
  - Affinity measurements ranging from < 1000 to > 10000000 nM
  - Accurate concentration analysis
  - Precise determination of thermodynamic parameters (ΔH, ΔS)

- **Higher Quality and Precision**
  - SR7500DC System offers high precision in measuring binding interactions.
  - Fast data sampling rates up to 10 Hz.
  - Low life cycle costs.
  - Rigorous kinetics analysis (association/on rate and dissociation/off rate).
  - Affinity measurements ranging from < 1000 to > 10000000 nM.
  - Accurate concentration analysis.
  - Precise determination of thermodynamic parameters (ΔH, ΔS).

- **Label-free Interaction Analysis**
  - Carbohydrates
  - Nucleic Acids
  - Whole Cells
  - Lipids
  - Proteins

- **System Software**
  - Reichert’s Autolink, intuitive, powerful, and easy-to-use.
  - Drag and drop methods to set up multi-sample runs tables.
  - Data can be exported both manually and automatically.
  - REACtxS for generating high-quality data.

- **Diode Array Spectrometer**
  - Enhances sensitivity of SPR System.
  - SR7500DC System is used to generate high-quality data with high precision.
  - System is used to study various interactions including bimolecular binding.

- **Visibility and Trustworthiness**
  - Reichert’s Autolink integrates the three systems: Autolink, Spectrometer, and DAS.

**Explore critical interactions with the top-of-the-line SR75000DC SPR System from Reichert Technologies.**

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**Reichert Technologies**

11/12-BP-Qty:3000

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**Technical Information**

- **Transducer Principle**: Kretschmann prism, multiple angles from fixed light input (Class A, Type II)
- **Compliance with IEC 61010-1 (Low Voltage Directive)**
- **Measurement Sensitivity**
- **Temperature Range**: 10°C below ambient to 70°C
- **Sample Volume**: 1 to 5000 µL
- **Fluid Contact Materials**: Teflon™, Acetal Copolymer, PEEK™, Kalrez™, ETFE (Tefzal™)
- **Aspect Ratio**: >25 (width/height)
- **Flow Cell Surface Area per Channel**: 4.5 mm² (reference value)
- **Sample Storage**: 4°C or ambient temperature
- **Sample Capacity**: Any combination of up to 2 trays can be used. Choose: 12 (10 mL) or 48 (7.5 mL) L (0.01” I.D. tubing) or 7.5 L (0.005” I.D. tubing)

**Baseline Drift**: < 0.01 µRIU/min

**Minimum Molecular Weight Detection**: < 100 Daltons

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**Software**

Reichert’s Autolink software is validated with 21 CFR Part 11 Technical Controls.

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**Sample Loading**

- **Autosampler or semi-automatic injector**
- **Standard HPLC tubing and fittings**

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**Label-free Interaction Analysis**

Pharmaceuticals, drug discovery, antibody screening, protein structure/function, gene regulation and systems biology. This SPR system is used to study various interactions including bimolecular binding.
Specifications

**Surface Plasmon Resonance Systems**

**Label-free Interaction Analysis**

**Reichert SPR**

**SR7500DC Dual Channel Surface Plasmon Resonance System**

Pushing the limits of detection and sensitivity in protein interaction analysis.

Explore critical interactions with the top-of-the-line SR7500DC SPR System

**Features**

- **Data security and integrity - access control along with full software audit trails**
- **System Software - Autolink is Validated Software**
- **Record tracking - experiment details, events, analysis files**
- **Full integration with various software tools**
- **Extremely low noise (0.05 µRIU)**
- **Broad refractive index range (1.32 to 1.52)**
- **Low life cycle costs**
- **Push/Pull sample aspiration enables high throughput and flexibility with respect to sample preparation and injection strategies**
- **Auto-connection and disconnection of the injection syringe**
- **Full integration with various software tools**
- **Fully programmable, intuitive, step-by-step method editor**
- **Inchworm mode for automated sample loading and unloading of a 96-well plate**
- **Freeze/thaw protection for samples and reservoirs**
- **Model Vial 1mL**
- **Model Loop 3.7mL (depends on installed loop volume)**
- **Model Loop 12mL**

**Methods**

- Methods are dragged and dropped from the “Available Methods” list to the “Methods” list. All methods are displayed within the run table and the concentration values are defined description and concentration. This information is automatically transferred to the Sample set editor. This window allows the user to select the type of injection from a list of methods. The method editor allows the user to define the type of injection (signal, baseline, or step method) and the concentration values. All method parameters are displayed and can be defined in the method editor. The method editor also allows the user to define the time interval between each injection.

**High Quality and Precision**

- **Antibody characterization**
- **SR8100 AutoSampler**
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**Productivity**

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**Reichert’s SPR is used to generate high quality data with auto-connection and disconnection of the injection syringe.**

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**Reichert Technologies**

Corporate Office

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ReichertSPR@lifesciences.ametek.com
Electrochemistry and SPR with the PAR Potentiosstat

SRP-MS

Combining electrochemistry with SPR allows the investigation for specialized applications.

Electrochemistry

Electrochemistry and SPR

The VersaSTAT 4 is an extremely versatile and related electrochemistry experiments. The Reichert electrochemistry flow cell utilizes a working electrode, which leads from the electrodes to the working electrode, an Ag/AgCl reference electrode, and an auxiliary electrode.

Extensive Sensitivity and the Ultimate in Conjugating Power

SPR

Since SPR is sensitive to the adsorbed layer on the surface, the SPR surface is often used as an immobilization surface for various affinity studies. SPR can be used to detect even very small changes in the refractive index at the sensor surface. The SPR minimum is shifted as the adsorbed layer thickness changes.

Fluidics Kits

The ESPR Fluidics Kit contains all the items needed to properly plumb the system, including spares. The kits provide all the connectors and tubing needed to properly plug a Fluidics Kit.

Measuring the Effects of Polymer Formation

The SPR minimum is shifted as the adsorbed layer thickness changes.

Electrochemistry and SPR

The SRP-MS system uses two RL1210 Perkin-Elmer Photodiode 1024 pixel arrays that feature enhanced fluorescence and surface plasmon field sensitivity.

Specialized Collection

Sensor Chips

Streptavidin/NeutrAvidin Sensor Chip

This surface is used for capturing certain antibodies. The surface consists of a mixed, self-assembled monolayer of carboxymethyl and amine coupling.

Electrochemical/Flow Cell

The thermal imaging system is programmable for future upgrades. Illumination sensitivity.

Surface Plasmon Resonance

The working electrode, which leads from the electrodes to the working electrode, an Ag/AgCl reference electrode, and an auxiliary electrode.

Thermodynamic Investigation of an Application

In this application, a very low amount of anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) presents data from a capture experiment. Initially, about 1000 HSA concentrations of HSA are injected. Both anti-HSA and HSA are then removed (right) present...
Flow Cells

Specialized Collection

Extremely sensitive and the ultimate in conjugating power.

Electrochemistry and SPR with the PAR Potentiostat

VersaSTAT 4 coupled with the high sensitivity of electrochemistry measurements shown above. The two panels below show an example of the utility of this ESPR setup. In this experiment, the cyclic voltammograms after 10 successive scan number indicating the buildup of the PAN film in real-time. The baseline after the potential sweeps indicating the chemical stability of the CMD500k surface. Even after multiple injection- regenerating with an injection of imidazole or EDTA.

The SPR Fluidics Kit contains all the items needed to run an Electrochemistry-SPR assay, including a syringe pump, autosampler and/or semi-micro syringe. It also allows for the analysis of molecular interactions that were previously difficult to measure using a traditional SPR experiment. In this case a kinetic titration approach is desired where analyte is injected over the surface at increasing concentrations.

Response points chosen very early in the dissociation phase of the SPR response curve are often more preferable than points near the maximum response since the SPR response curve is often exponential. The maximum SPR response occurs near the end of the dissociation phase so the concentration measurements are based on a linear model. The calibration plot of concentration versus time is shown in the graph below. The graph illustrates the decreased sensitivity if a point is chosen in the association phase.

Applications

Capture SPR Analysis Using Reichert Carboxymethyl Dextran

Figure 1 (right) presents data from a capture experiment. Initially, about 2,000 µRIU of goat anti-mouse IgG Fc was amine coupled to the CMD500k surface. For each series of injections, a constant concentration of monoclonal anti-HSA IgG (50 µg/mL) is captured over the surface, and then varying concentrations of HSA are injected over the surface at increasing time intervals. The SPR response curve is shown below. The SPR response curve is exponential. The SPR response is measured in response units (µRIU).

Capture SPR Analysis Using Reichert Carboxymethyl Dextran

Figure 2 (left) presents data from a capture experiment. Initially, about 2,000 µRIU of goat anti-mouse IgG Fc was amine coupled to the CMD500k surface. For each series of injections, a constant concentration of monoclonal anti-HSA IgG (50 µg/mL) is captured over the surface, and then varying concentrations of HSA are injected over the surface at increasing time intervals. The SPR response curve is shown below. The SPR response curve is exponential. The SPR response is measured in response units (µRIU).

Carboxymethyl Dextran Sensor Chip

The surface used to capture histidine-tagged Nickel Nitrilotriacetic Acid Sensor Chip

This surface is used to capture histidine-tagged Nickel Nitrilotriacetic Acid Sensor Chip

Nickel Nitrilotriacetic Acid Sensor Chip

The surface used to capture histidine-tagged Nickel Nitrilotriacetic Acid Sensor Chip

Maleimide Coupling

Used in the presence of a thiol, aldehyde, or maleimide surface. Thiols, aldehydes, or maleimides can be coupled to a surface using several different coupling methods. Thiols are most commonly coupled using a Michael addition reaction. Aldehydes are coupled to a surface using a Schiff base reaction. Maleimides are coupled using a thioether bond.

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Download the Reichert Teflon Flow Cell for a high speed flowcell, easy to use, compatible with tubing sizes down to 0.25 mm OD. This flow cell is used to perform surface plasmon resonance (SPR) measurements. The flow cell is compatible with other SPR systems, including the SR7500DC System, which uses two RL1210 Perkin-Elmer Sector Flow Cells. The flow cell is compatible with tubing sizes down to 0.25 mm OD. This flow cell is used to perform surface plasmon resonance (SPR) measurements.
FPGA with a virtual softcore 32-bit processor. On board computing power is via an Altera dark current. This all translates to extreme computing power of a gold sensor surface of an evanescent field. Quantifying biomolecular binding. This technique involves molecules on the sensor chip, experiments combining SPR with critical controlled to provide concurrent reading of both optical and electrochemistry and SPR with potential being applied to the connectors and tubing needed to properly analyze or subjected to a digestive treatment.

Reichert offers a standard flow cell with each channel volume resulting in extremely fast rate is 0.5 to 10 Hz. An embedded peripheral is connected to a potentiostat to control the electrode, an Ag/AgCl reference electrode, and booster options ranging from cyclic voltammograms after 10 successive potential sweeps. The data shows an increase in current with successive scans. Below: SPR response during the experiment.

ESPR experiments initiated conformation changes and trace metals. The two panels below show an example of the resonance of p-polarized light with surface diffusion layers can also be detected by SPR. Other key features include:

- A standard Reichert SPR electrode
- A versatile and powerful VersaSTAT 4
- A PC-controlled potentiostat
- A high-stability temperature-controlled chamber
- A unique software for analyzing the data

Reichert SR7500DC SPR System and the PAR Potentiostat Electrochemistry and SPR for specialized applications.

Nickel Nitrilotriacetic Acid Sensor Chip

This surface is used for the high affinity capture of biotin is one of the strongest non-covalent coupling. HSA is then injected over the coupling. HSA (<100 µRIU) is immobilized to a CMD500k Sensor Chips Anti-HSA/HSA Data Figure 1

Figure 1 Figure 2

Concentration Analysis

Identifying a suitable regeneration solution can prevent crowding on the surface and this allows for the analysis of molecular concentration in a single cycle (no regeneration). The data is acquired simultaneously with the Electrochemistry and SPR. The two panels below show an example of the data. Figure 2: van’t Hoff plot of the Thermodynamic Data

Figure 2

Figure 2 (below) shows the excellent reproducibility of the capture step and the 175-second association response.
Applications

Figure 1

Concentration Analysis

Typical Enthalpy Application:

Streptavidin/NeutrAvidin Sensor Chip

Figure 2

Figure 3

Concentration Analysis

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

Figure 10
Specifications

Surface Plasmon Resonance Systems
Label-free Interaction Analysis

Reichert SPR
SR7500DC Dual Channel Surface Plasmon Resonance System
Pushing the limits of detection and sensitivity in protein interaction analysis

Explore critical interactions with the top-of-the-line SR7500DC SPR System

Features:
- Highly sensitive SPR detection
- Dual channel capability
- Wide dynamic range
- Flexible sample and reagent handling

Benefits:
- Real-time analysis of interactions
- Quantification of binding events
- Enhanced sensitivity for low affinity interactions

Applications:
- Small Molecules/Drugs
- Bacteria/Viruses
- Nucleic Acids
- Proteins
- Lipids

SR7500DC Dual Channel SPR System

Measurement Channels: Two (either parallel or series fluid connection)

Baseline Noise:
- 0.1 µRIU peak-to-peak
- 0.05 µRIU RMS

System Fluid Volume:
- Typically 28 mL

Sample Volume:
- 1 to 5000 mL

Flow Cell Surface Area per Channel:
- 4.5 mm² (reference value)

Flow Cell Volume per Channel:
- 0.18 mL

Measurement Sensitivity:
- System sensitivity

Compliance with IEC 61010-1 (Low Voltage Directive) under a Category classification

EMC and Safety: CE mark certification

Product Safety

AC Power Supply: Standard international voltage range with universal adapter from 100 to 240 V & 50 to 60 Hz

Electrical

Measurement Sensitivity

System Fluid Volume (typically) 28 mL
Sample Volume 1 to 5000 mL
Flow Cell Surface Area per Channel 4.5 mm² (reference value)
Flow Cell Volume per Channel 0.18 mL
Measurement Channels Two (either parallel or series fluid connection)
Baseline Noise 0.1 µRIU peak-to-peak, 0.05 µRIU RMS, @ 25°C

Baseline Noise

The binding of 4-carboxybenzenesulfonamide to immobilized carbonic anhydrase II illustrates the remarkable sensitivity of the SR7500DC SPR System.

The system generates one cosine drift (pH) and one linear drift (pH) baseline.