

*Ultra Sensitive Surface Plasmon Resonance (SPR) Instrument with Built-in Versatility*

## EC-SPR Analysis Module

*Simultaneous Electrochemical and SPR Analysis*

Biosensing Instrument Inc. provides an analysis module for electrochemical surface plasmon resonance research (EC-SPR). The module's design takes into account the specific needs of high quality electrochemical measurements while maintaining the high performance of SPR detection. It facilitates simultaneous electrochemical and SPR measurements on the same sensor chip, and is ideal for studying various electrochemical processes with SPR and for controlling surface binding and molecular conformational changes via electrochemical means.



### Key Features

- ☑ Optimized design for high quality electrochemical experiments
- ☑ Easy introduction of electrolytes and sample solution
- ☑ Allows for purging of dissolved oxygen from electrolytes
- ☑ Modular design provides users with maximum flexibility
- ☑ Wide dynamic range and high sensitivity for both large and small molecules
- ☑ Broad response time (ms - hours) for various electrochemical processes
- ☑ Dual SPR detector to assess uniformity of electrochemical processes

## Performance Characteristics:

- **Module geometry and electrode configuration:** The module's geometry and size are comparable to standard electrochemical measurements. A Pt counter electrode and a Ag/AgCl reference electrode are located at optimized positions, which allow users to take SPR data without compromising high-quality electrochemical measurements. Users may also choose their own counter and reference electrodes to create specific applications.
- **Kinetic and voltammetric measurements:** The innovative design, together with the BI's unique fast SPR detection capability (down to ms), make it possible for fast potential step and voltammetric measurements.
- **Purging dissolved oxygen:** The module's design allows users to purge dissolved oxygen from the electrolytes, which is critical for many electrochemical measurements that are sensitive to oxygen interference..
- **Easy to Use and Simple to Maintain:** The electrodes can be easily assembled into the module body and connected to a potentiostat, making it simple to setup, operate, and maintain. This EC-SPR Module may be used with all BI-SPR instruments for high performance EC-SPR analysis.
- **Bio- and electrochemical compatible:** The module's body and fluidic components are constructed with biocompatible materials. Such biocompatibility eliminates sample carry-overs and memory effects.

## Applications:

BI's **EC-SPR Module** is designed for users who demand both high-quality electrochemical data and high-performance SPR experiments. When combined with the BI-SPR instruments, it is an ideal tool to monitor various electrochemical processes and phenomena using SPR. Examples include stripping analysis, dopant movements in redox and conducting polymers, potential-induced molecular adsorption/desorption and conformational changes in adsorbed molecules. It also enables users who are primarily interested in SPR to control surface charges (electric field) and various processes with the potential. Examples include, but are not limited to determination of coverage of molecular probes, potential-induced surface regeneration and DNA hybridization/melting under applied potentials. The open design provides users unique opportunities of innovative research and applications.

- Electrochemical SPR studies of redox-labeled biomolecules
- Redox-enhanced and -impeded biomolecular interactions (e.g., protein-protein, protein-DNA, and protein-drug interactions)
- Electric field-controlled binding and dissociation processes
- Electric field assisted DNA hybridization and melting
- Electrical field- and redox-induced conformational changes of immobilized proteins and other molecules
- Electrochemical deposition and stripping
- Development of high-throughput electrochemical biosensors
- Real-time monitoring of influx/efflux of ions within redox thin films

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