# UNITED SCIENTIFIC SUPPLIES, INC.

## Surface Plasmon Resonance Apparatus

NEW


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Required Accessory: . . SPECT02 Intermediate Spectrometer

| Item No. | Description |
|---|---|
| SPRA01 | Surface Plasmon Resonance Apparatus |

- **Demonstrate the principles of SPR analysis**
- **Use a light beam to excite resonant electron oscillations under specific conditions**
- **Includes a collimated laser, polarizer, and photodetector**

**Surface Plasmon Resonance is an analytical technique** used for detecting and tracking a wide variety of surface processes such as DNA and protein interactions, drug mechanisms, immunoassays, anodic stripping, corrosion, gas detection, and many more.

In this technique, a light beam interacts with the electron plasma in a metal film at a metal-dielectric interface to excite resonant electron oscillations—plasmons—under specific conditions. The component of the photon momentum parallel to the metal surface must match the plasmon momentum. This occurs at a specific incidence angle of the light beam, which is highly sensitive to the state of the surface. In particular, any material attached to the surface produces a detectable change in the resonance angle.

**The resonance is detected by monitoring the intensity** of a totally internally reflected laser beam as a function of incidence angle. At resonance, light energy is absorbed and a significant intensity drop is observed.

**The apparatus is used together with** the United SPECT02 Intermediate Spectrometer (not included). The spectrometer's slit, lenses, and eyepiece are replaced by a collimated laser, a polarizer, and a photodetector. An adjustable support plate for the SPR prism fits onto the spectrometer's table and an electronic unit controls the laser and measures the light output.

The SPR prism consists of a precise semicircular glass block with a thin layer of gold deposited on the flat surface and a plastic pocket for liquid samples fixed behind it (the Kretschmann configuration.)

At the laser beam's incidence point, an evanescent wave propagates through the gold layer. Surface plasmons are excited at the interface between the gold layer and the liquid sample, diverting energy from the monitored reflected laser beam.

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