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## **SPR Technical Notes: How does SPR Work?**

Surface plasmon resonance (SPR) is an optics-based technology for monitoring binding interactions between multiple molecular partners. SPR occurs when surface plasmon waves are excited at a metal/liquid interface. Light is directed at, and reflected from, the side of the surface not in contact with sample, and SPR causes a reduction in the reflected light intensity at a specific combination of angle and wavelength. Biomolecular binding events cause changes in the refractive index at the surface layer, which are detected as changes in the SPR signal. The refractive index change for a given change of mass concentration at the surface layer, is practically the same for all proteins and peptides, and is similar for glycoproteins, lipids and nucleic acids.

The sensor surface is prepared by coupling one of the molecular binding partners to an activated dextran surface using standard chemistries such as amine, thiol, or aldehyde coupling. For most applications, the surface of the biosensor chip is actually a lawn of carboxymethyl dextran polymers to which the molecule of interest is attached, thus lending a certain degree of mobility to the bound molecule (ligand). In the binding experiment, the partner molecule (analyte) is injected to flow over this prepared ligand surface. Any interaction between partners is recorded as a function of time in resonance units (RU). These RU are arbitrary units that reflect the changes in refractive index (a function of mass) at the sensor surface that occur as a result of the analyte binding to or releasing from the surface-captured ligand.



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