

Installation of Surface Plasmon Resonance (SPR) Unit at CIPHET, Ludhiana

Surface Plasmon Resonance (SPR) Unit was installed in Agriculture Structures and Environmental Control Division at CIPHET, Ludhiana. SPR biosensors are widely used for detection of pathogens, toxins, pesticide and antibiotic residues based on either enzyme inhibition or antigen antibody binding. The SPR method detects molecules bound to a ligand that is covalently attached to a solid surface. As the density of biomaterial on the surface increases, changes occur in the refractive index at the solution or surface interface. This change in the refractive index is detected because the angle or wavelength at which the incident light is absorbed at the surface changes upon binding. The difference in the angle or wavelength is proportional to the amount of material bound on the surface, giving rise to a signal that is termed surface plasmon resonance (SPR).

The development of fast, on-line and accurate sensing using SPR opens up opportunities for biosensors in many different agricultural areas —*in situ* analysis of pollutants in crops and soils, detection and identification of infectious diseases in crops and livestock, on-line measurements of important food processing parameters, monitoring animal fertility and screening therapeutic drugs in veterinary testing.

The SPR methods also can be used to biomolecular interaction analysis such protein-protein, protein-DNA, DNA hybridization, kinetics and thermodynamics of interaction which could be useful in basic research to understand phenomena at molecular level *in vivo*.



SPR Unit

Installation of High Pressure Homogenizer at CIPHET, Ludhiana

High Pressure Homogenizer was installed in Agriculture Structures and Environmental Control Division at CIPHET, Ludhiana. The operating pressure is up to 40,000 psi. The minimum batch volume is 10 ml and constant flow through capacity of 44 ml/min. The applications include cell disruption, nanoemulsions and homogenization.



High Pressure Homogenizer