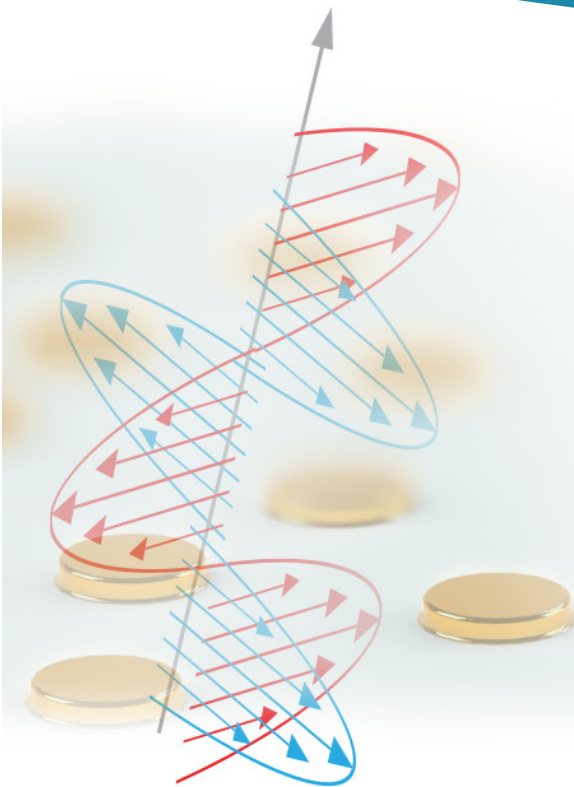




Insplorion

# NPS Applications: Lipids



## Insplorion's Nanoplasmonic Sensing Technology

Nanoplasmonic sensing (NPS) is an optical technology that exploits gold nanostructures as local sensing elements. The nanostructures act as optical antennas, responding to processes such as changes in refractive index and density, at the sensor-sample interface. NPS is a versatile sensing platform that enables detection and monitoring of a large variety of material and interface process under in situ conditions.

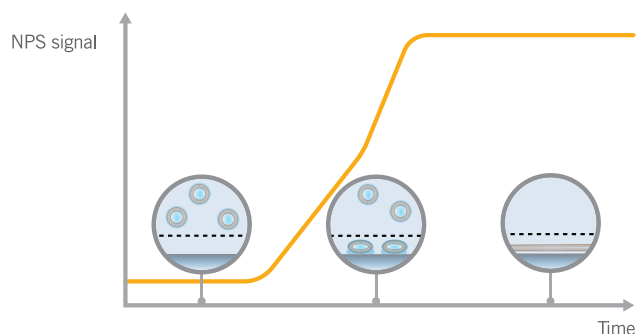
Insplorion's research instruments are made to bring out the incredible sensing capabilities of the NPS sensors, either as stand alone units (XNano, X1) or in combination with QCM-D (Acoulyte).

- **Real-time information** *showing changes in the lipid structures' physico-chemical properties.*
- **Versatile** *with applications ranging from vesicle adsorption and supported lipid bilayer formation, to structural modifications and biomolecular interactions.*
- *Short sensing depth imparts high **Surface Sensitivity** and reduces background signals.*
- **Optical** *measurement principle confers inherent stability and provides label-free sensing.*

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# NPS for Lipids

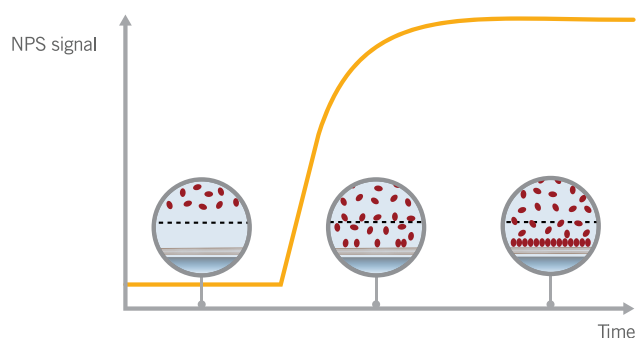
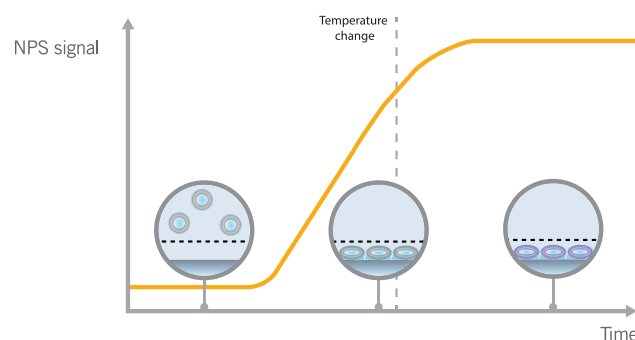


## Lipid Adsorption and Lipid Bilayers

Insplorion's NPS technology allows for real-time tracking of lipid vesicles as they adsorb onto various surfaces. It has been shown that certain materials, such as  $\text{SiO}_2$ , support the formation of lipid bilayers from vesicles, whereas others, like  $\text{TiO}_2$ , maintain the vesicle structure. The interaction of lipids and surfaces is applicable to targeted drug delivery, vaccine development, and biocompatibility of implants.

## Lipid Phase Change

NPS has also been used to study the impact of external parameters, such as temperature, on the properties of lipid structures. Changes in temperature typically result in the reorganization of the lipid tails, which in turn leads to changes in the packing density. Studying such phase changes gives insight into lipid membrane permeability, and has applications in triggering drug release, and disrupting bacterial or viral membranes.



## Interaction of Proteins with Lipid Bilayers

Biological systems are typically encapsulated by membranes composed of lipid bilayers; their interaction with proteins can determine what crosses into and out of the cell, as well as triggers of cell differentiation, replication, or programmed death. Insplorion's instruments have proven indispensable when determining binding events and changes in conformation for proteins attached to lipid bilayers, allowing the differentiation of mass loss from water loss.

## About Insplorion AB

Insplorion is a Swedish company built around its disruptive proprietary Nanoplasmonic Sensing platform. It was founded in 2010 on the basis of research at Chalmers University of Technology; and has been on the Swedish stock market since 2015. There are currently three main branches of operation; NPS-based research equipment (*Insplorion X1*, *Insplorion XNano*, and the *Insplorion Acoulyte*), battery sensors (*Insplorion InBat*), and air quality sensors (*Insplorion InAir*). When developing application specific devices, Insplorion often commercializes its sensor platform in collaboration with partners.

If you're interested in learning more about Insplorion's products, technology platform, or its applications, contact us directly.

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