

Abstracts 1

Unique label-free biomolecular interaction platform for screening and crude sample analysis

Chiraz Frydman¹
HORIBA Scientific, France
chiraz.frydman@horiba.com

Molecular bio-affinity analysis is increasingly moving towards label-free approaches. Surface Plasmon Resonance imaging (SPRi) is an ideal innovative optical technique to meet this demand. It's taking the standard SPR a step further toward the screening investigation. It permits the label-free detection and the quantification of molecules in real-time and in array format. Characterization of multiple interactions (affinity, kinetic rates) is thus possible on a single biochip.

This technology is dedicated to the determination of kinetics and physico-chemical interactions. It is also adapted to study a series (more than 100) of label-free bindings, enabling simultaneous measurements of all reactions to be observed on a single biochip throughout the entire analysis

During this talk, the SPRi principle will be introduced and the great potential for bio-affinity measurements and molecular recognition will be illustrated through several applications:

- Protein screening example will be illustrated by the high-throughput screening of Affimer proteins for use as affinity ligands
- Crude sample analysis and characterization will be highlighted by two main examples: SPRi-MALDI MS coupling^{1, 2, 3} and serum analysis for allergy investigations¹. Both examples will point the flexibility system and the biochip which allow the injection of crude sample and also possibility to directly couple SPRi to MS analysis.
- Cell sorting and pathogen detection will be the perfect example to demonstrate the ability to analyze molecules and also cells

¹ Anders U. and al (2017) SPRi-MALDI MS: characterization and identification of a kinase from cell lysate by specific interaction with different designed ankyrin repeat proteins, Analytical and Bioanalytical Chemistry, March 2017, Volume 409, Issue 7, pp 1827–1836 DOI:10.1007/s00216-016-0127-3

² Musso J. and al (2014). Biomarkers probed in saliva by surface plasmon resonance imaging coupled to matrix-assisted laser desorption/ionization mass spectrometry in array format. Analytical and Bioanalytical Chemistry, doi: 10.1007/s00216-014-8373-8

³ Rémy-Martin and al. (2012). Surface plasmon resonance imaging in arrays coupled with mass spectrometry (SUPRA-MS): proof on concept of on-chip characterization of a potential breast cancer marker in human plasma. Anal. Bioanal. Chem. 404(2): 423-432

1 Chardin H. and al (2014). Surface Plasmon Resonance imaging: A method to measure the affinity of the antibodies in allergy diagnosis. J Immunol Methods, DOI:10.1016/j.jim.2013.12.010