SPPIN - Saints Pères Paris Institute for the Neurosciences, CNRS UMR 8003
Université Paris Cité, Faculté de Sciences
Campus Saint Germain, 45 Rue des Saints Pères, Paris 75006.
Metro 4 Saint Germain

NANOSCALE 2022

Organisers -
Martin OHEIM, SPPIN, CNRS, Université de Paris, Paris, France
Adi SALOMON, Dept. of Chemistry & BINA Nanocenter, Bar-Ilan University, Ramat-Gan, Israel

April 6-8, 2022 Université de Paris, 6th arrondissement de Paris, France
NANOSCALE2022

THE CONTEXT. After more than 20 years of nano-sciences and -technology and nano-devices being present in almost every part of science, and even our day-life, a reliable measurement of nanometric distances along the optical axis of a microscope, a spectrometer or other optical devices is still missing.

The EU-funded NANOSCALE project (https://nanoscale.sppin.fr), a French-Israeli collaboration between SPPIN and BINA aims at filling this gap. Based on a patented nanometric sandwich, NANOSCALE has provided a unique multi-layered calibration slide for surface fluorescence, together with a dedicated software analysis tool. The nano-patterned slide features thin layers of non-fluorescent spacer, fluorescent and a non-fluorescent capping layer, all with the refractive index close to that of a living cell. It permits, for non-professional user, a calibration of fluorescence in terms of axial distance, a key requirement for quantitative near-surface optical imaging, spectroscopy and sensing.

OBJECTIVES. The NANOSCALE2022 symposium will provide an update on the current state of research, bring together a vibrant community of academics and industry and trigger future collaborations and innovations. It also aims at opening the community and inciting follow-up grant applications, potentially in new geometries.

Through multiple thematic sessions, we will explore the bases, current state and applications of surface fluorescence and related techniques and we will outreach to communities not yet targeted, including pharmacology/toxicology, environmental science, as well as the national and European institutes of standards.

THE VENUE. The workshop will take place on the premises of Université Paris Cité (UP) in the 6th arrondissement of Paris. UP is the second-biggest French research university founded in 2020 through the fusion of Paris Descartes University, Paris Diderot University and the Institut du Globe.

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Wednesday and Friday : ILLUMENS Salle Ambroise Paré (ex-école de chirurgie), 6th floor

Thursday : Salle des Theses 3rd floor

https://www.sppin.fr/contacts/

https://nanoscale2022.sciencesconf.org/resource/page/id/3

CONTACT. nanoscale@sppin.fr

Tel: +33 1 76 53 43 41 (Aude Bombay)
Wednesday 6 April 2022  ILLUMENS, ex-école de medicine, 6th floor

18h00 - 18h45  Buffet

18:45- 20:30  Session I

Introduction to NANOSCALE

Eitan Reuveny
Novel ion-channel interaction revealed by proximity-ligation assay and fluorescence-resonance energy transfer

Christopher Yip
Probing the solid-liquid interface by SAF microscopy: Applications to the study of surface adsorption dynamics

Marc Guillon
Digital optical phase conjugation through thick scattering tissues with a wavefront sensor

Kaitlin Szederkenyi
Developing a confocal total internal reflection-supercritical angle fluorescence geometry with sample scanning
Thursday 7 April 2022
Salle des Theses 3rd floor

9h00 -
Gathering at Café “Le Comptoir des Saints Pères”
29 rue des Saints Pères, (Junction with rue Jacob, 50m from the university)

9:30 - 11:15 Session 2

Keynote: Frédérique de Fornel
Evanescent waves and near-field microscopies

Carine Julien
Quantitative surface fluorescence microscopy: a flexible TIRF-SAF microscope for combined sample- and Fourier-plane imaging

Christophe Zimmer

TBA

Mohamad Hamode
Metallic nanostructure for pharmaceutical optical sensing and for calibration of optical microscopies

11:15 - 13:15 Poster sessions + lunch

13:00 - 14h30 Session 3

Ariel Levenson
Gathering multiple disciplinary skills to tackle nano-characterization and nano-metrology challenges: the C’Nano and Club NanoMetrology initiatives

Rodolphe Jaffiol
Quantification of single-cell adhesion by variable-angle TIRF imaging

Dror Fixler
Biological logic-gates actualization by examining the effects of gold nanoparticle-fluorophore conjugates on the fluorescence lifetime.

Hodaya Klimovsky
Characterising thin-film polymer layers with far-field light

14h30 - 14h45 Coffee
14h45 - 16h00  **Session 4**

**Yitzhak Mastai**  
Chiral nanofilms of metal oxides by molecular-layer deposition

**Adi Salomon**  
3D Metallic networks - optical properties and applications

**Ilya Olevsko**  
Color coding of axial fluorophore distance

**Gerardo Byk**  
New Biocompatible Nanoparticles: multistep chemical modifications and biological applications

16h00-16h30  **Coffee + white boards**

16h30 - 17h30  **Session 5**

**Brieuc Chauvin**  
*In vitro* study of the diffusion barriers established by septins with single particle tracking

**Martin Oheim**  
Combined TIR-excitation and SAF detection: why and what for

**Gerhard Schütz**  
Following T cell antigen recognition molecule by molecule

17h30-19h00  **INTERNAL NANOSCALE team meeting**
Friday 8 April 2022  
**ILLUMENS, ex-école de medicine, 6th floor**

9h30  
Coffee + croissants on the terrasse

10h00-12h00  
**Session 5- surface biology**

Nicolas Demaurex  
Molecular and structural determinants of calcium signalling at endoplasmic reticulum-plasma membrane contact sites

Thierry Galli  
Molecular and cellular mechanisms of unconventional secretion

Andreas H. Guse  
Calcium microdomains in T cells

**Student prize awards**

12h00-12h30  
Coffee + white boards, farewell

12h30-14h30  
for PIs: in small committee (grants, applications, collaborations with people who want to stay): drinks + food
Sponsor of the best student flash talk:

ZEISS Microscopie France SAS

Sponsor of the best student poster presentation:

Physik Instrumente, Karlsruhe, Germany

your coffee breaks come from:

Nikon France