
**Monday, February 21**
**4:30 PM – 6:00 PM**
**Esplanade, Room 158**
**Interherence GmbH**

**Reproducibility Through Precision: Chip-Based Technologies For Precise Control of Sample Temperature and Illumination in High- and Superresolution Microscopy**

Biological systems are complex and many environmental parameters affect their behavior. The chemical conditions of the sample volume, including pH and salt concentration, are often well considered when designing experiments in high and super-resolution microscopy. However, control over the physical conditions such as temperature or the amount of light deposited in the sample volume are often not well characterized and might differ from setup to setup. The imprecisions mainly arise due to the lack of appropriate sensor that can be placed close to or directly in the sample volume. Integrated systems, which are in direct contact with the sample, can help to improve reproducibility in biophysical studies of living cells, proteins or DNA and make interpretation of the acquired data easier.

Measuring and controlling the temperature of small sample volumes, as is often the case in high and super resolution microscopy, is technological challenging. In the first part of this talk, we will review state of the art approaches for temperature management in light microscopy, analyze their strengths and weaknesses and talk about our solution, VAHEAT. We will highlight the importance of controlling the temperature in biophysical studies based on recent research covering the fields of single molecules studies, live cell imaging and colloid chemistry.

In the second part of the talk, we will focus on illumination conditions specifically in total internal reflection (TIR) microscopy. After analyzing the limits of current technologies, we take the opportunity to pre-launch QuScite - our device for TIRF microscopy on a chip. This waveguide TIR system relies on photonic integrated circuitry (PIC) and allows to separate the excitation from detection path, which opens up completely new pathways for studying single molecules and processes in cell membranes. QuScite's unprecedented field of view in the range of square millimeters combined with its ease of use even in complex workflows should allow everyone, on any microscope to perform high sensitivity TIRF measurements under reproducible conditions.

Note: This presentation will be interactive. You will have the opportunity to see and test demo systems on site.

**Speakers**
Jaroslav Icha, CMO, Interherence
Pierre Türschmann, CEO, Interherence