Wednesday, February 24, 2021
3:30 PM-4:00 PM
LUMICKS

Correlative Force–Fluorescence Measurements to Reveal the Dynamic Life of Single Biomolecules: Latest Technology Advancements by LUMICKS, and Latest Findings on Protein Disaggregation by Professor Sander Tans

To decipher complex molecular interactions, you need to be able to observe a biological process from multiple points of view. Using LUMICKS' groundbreaking C-Trap® Optical Tweezers – Fluorescence & Label-free Microscopy, you can simultaneously visualize individual molecules in real time and measure dynamic biological processes in great detail.

During our webinar, we will reveal how our latest technology development, the Trap Distance Lock, allows you to measure biomolecular equilibrium dynamics with unprecedented stability over extremely long periods of time. This new feature offers the ultimate system stability that enables you to capture the rarest, fastest, and smallest conformational changes that underlie the energy landscapes of biomolecules.

After a brief introduction by LUMICKS, we are honored to give the floor to our invited speaker Prof. Sander Tans who will present his work on polypeptide loop extrusion using correlative force–fluorescence measurements. Re-dissolving protein aggregates is crucial to cells, but the molecular basis has remained unknown. Using combined optical tweezers and single-molecule fluorescence detection, Prof. Tans and his team showed that the disaggregase ClpB extrudes loops of protein chains through its central pore, and hence forcibly extracts protein chains from aggregates. The data reveal notable processivity, power, step-dynamics, and switching between translocation modes. Protein disaggregation can thus be highly deterministic and energy-driven process, while polypeptide loop extrusion may be exploited by other systems including p97/cdc48.

Speakers
Olivier Heyning, CEO and Founder, LUMICKS
Aida Llauró Portell, Senior Application Scientist, LUMICKS
Sander Tans, AMOLF and Delft University of Technology, The Netherlands