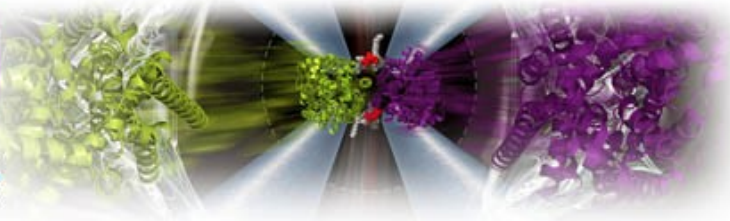


# BPS19

63<sup>RD</sup> ANNUAL MEETING OF THE BIOPHYSICAL SOCIETY

BALTIMORE, MARYLAND • MARCH 2–6, 2019



**Monday, March 4**

**11:30 am – 1:00 pm**

**Room 303**

**Asylum Research**

## **CAPTURING BIOCHEMICAL REACTIONS WITH VIDEO-RATE AFM**

Oxford Instruments Asylum Research will present the latest data acquired with its Cypher VRS, the world's first and only full-featured video-rate AFM. The Cypher VRS Atomic Force Microscope sets a new standard with easy operation—enabling high resolution imaging of dynamic events at high speeds, up to 625 lines/second which corresponds to about 10 frames per second. This speed is about 300x faster than typical AFMs and 10x faster than current “fast scanning” AFMs.

One of the strengths of traditional AFMs is its capability to monitor dynamic events in near-native conditions (i.e. in liquid at biologically relevant temperatures). However, capturing biological processes in real-time has been challenging up until now. Video rate AFMs provide that temporal resolution, allowing researchers to observe the progression of these reactions and capture kinetics. Video rate AFMs have allowed researchers to conduct a new set of experiments including biochemical reactions, membrane dynamics, conformational changes, self-assembly and degradation. In most cases, the spatial resolution is not compromised enabling researchers to locate the target or active site while tracking the progression of the reaction. They can observe structural dynamics of biomolecules and then correlate it to their function.

We will present a set of data to illustrate the potential of this new capability. Examples include DNA digestion and cleavage, DNA origami conformation changes, protein fiber assembly, membrane dynamics including molecular structure and rearrangement in the bacteriorhodopsin membrane, lipid bilayer growth, assembly of Type I collagen into fibrils and dynamic motion of CTAB hemi-micelles at the solid (HOPG) – liquid (aqueous buffer) interface.

### **Speaker**

*Sophia Hohlbauch, Applications Scientist, Asylum Research*