

4th Annual Conference and Expo on **Biomaterials**

February 25-26, 2019 | London, UK

Investigating dynamic biological processes with high-speed, high-resolution correlative AFM-light microscopy**Heiko Haschke, Florian Kumpfe and Torsten Müller**
JPK BioAFM Center, Germany

The ability of atomic force microscopy (AFM) to obtain three-dimensional topography images of biological molecules and complexes with nanometer resolution and under near-physiological conditions remains unmatched by other imaging techniques. However, the typically longer image acquisition times required to obtain a single high-resolution image (~minutes) has limited the advancement of AFM for investigating dynamic biological processes. While recent years have shown significant progress in the development of high-speed AFM (HS-AFM), the ability to scan faster has typically been achieved at the cost of decreased scanner range and restricted sample size. As such, these HS-AFM systems have mainly focused on studying single molecule dynamics and have been very limited in their ability to conduct live cell imaging. The novel NanoWizard® ULTRA Speed AFM not only enables high-speed studies of time-resolved dynamics associated with cellular processes, it's latest scanner technologies and compact design also allow full integration of AFM into advanced commercially available light microscopy techniques. Thus, fast AFM imaging of several frames per second can be seamlessly combined with methods such as epifluorescence, confocal, TIRF, STED microscopy, and many more. We will present how the latest advances in the ULTRA Speed AFM are being applied to study a wide-range of biological samples, from individual biomolecules to mammalian cells and tissues. We will also describe how this unique system is enabling new research opportunities with high-speed, high-resolution correlative AFM-light microscopy.

confregis.bioafm@bruker.com