

AI-Assisted Nanomechanical AFM Analysis in a Multi-Compartment Environment

May 21st, 2025 | 08:00 AM PDT | 11:00 AM EDT | 5:00 PM CEST



Join us and special guest speaker Dr. Upnishad Sharma, ETH Zurich, for this webinar on the **AI-Assisted Analysis of the Nanomechanical Properties of Biological Samples in a Multi-Compartment Environment using AFM.**

Recent developments have greatly extended the functionality of atomic force microscopes (AFM) to enable high resolution imaging and nanomechanical analysis in multiwell cell culture plates. This greatly extends the range, speed, and versatility of experiments possible, increases throughput and productivity, and generates statistically relevant datasets.

Discover next-generation capabilities:

- Autonomous AI-guided operation and advanced machine-learning capabilities for the automated identification and measurement of sample features
- Seamless integration with advanced optical microscopy
- Study living cells, tissues, 3d cell structures, and organoids under near-native conditions

Dr. Upnishad Sharma, a postdoctoral researcher in the lab of Prof. Daniel Mueller, will speak on investigating integrin-mediated mechanosensing in the extracellular matrix (ECM) using AFM-based Single-Cell Force Spectroscopy (SCFS).

Don't miss the LIVE demonstration, where we will perform nanomechanical AFM measurements using the new [CellWizard Stage](#).

Program - Wednesday, May 21st, 2025

17:00 AM CEST | 8:00 AM PDT | 11:00 EDT

17:00 Welcome & Introduction

Oilibhe Pabsch, Scientific Affairs Manager, Bruker BioAFM

17:05 Dissecting Integrin-Mediated ECM-Sensing using AFM-based SCFS

Dr. Upnishad Sharma, Dpt. of Biosystems Science and Engineering, ETH Zurich, Switzerland

17:35 LIVE Demonstration: CellWizard Stage and NanoWizard V BioAFM

Dr. André Körnig, Senior Applications Scientist, Bruker BioAFM

17:50 Q&A

18:00 Closing

Please don't hesitate to contact us at productinfo@bruker.com if you have any questions.

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Abstract and Biography

Dissecting Integrin-Mediated ECM-Sensing using AFM-based SCFS

Dr. Upnishad Sharma, Dpt. of Biosystems Science and Engineering, ETH Zurich, Switzerland

Integrins are transmembrane heterodimeric receptors essential for transducing internal/external forces across the plasma membrane. It remains to be understood how this ECM-mechanosensing is initiated during the early phases of cell adhesion. Which mechanotransduction pathways are selectively engaged to aid the early ECM-mechanosensing also remain poorly understood. In this talk, Dr. Sharma shall discuss work from his lab that has been crucial for understanding integrin-mediated mechanosensing for various integrin-ligand pairs. He shall also highlight how AFM-based SCFS enables the study of integrins, synergy between different integrins, and their role in mediating early mechanosensing of various environmental cues.

Dr. Upnishad Sharma, a Postdoctoral researcher in the lab of Prof. Daniel Mueller at the Department of Biosystems Science and Engineering, ETH Zurich, completed his PhD at ETH Zurich in 2024 and Masters in Life Sciences between University of Mumbai and EMBL-Rome in 2018. Previously, he worked in the field of epigenetics and cell biology. Currently, his interests lie in the biophysical aspects of integrin mediated mechanotransduction during development and disease).