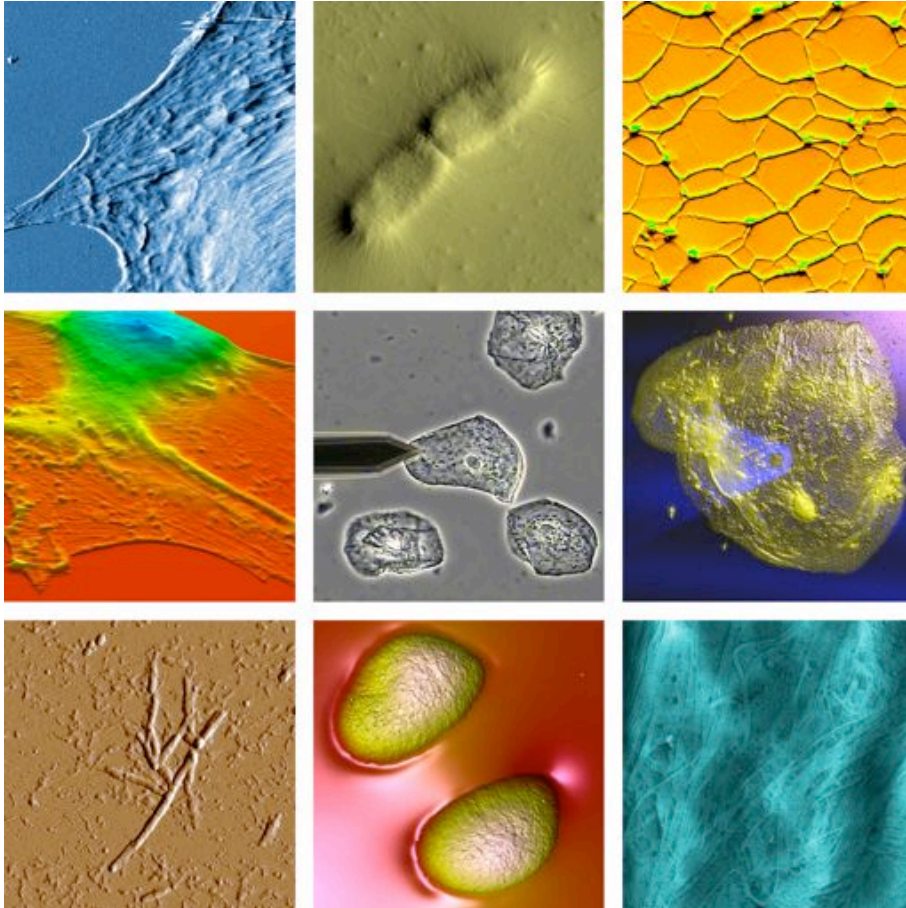


AtomicForce

**ASYLUM
RESEARCH**
Atomic Force Microscopes



AFM in Biology Class

**February 23-25, 2010
Mannheim, Germany**

AFM in Biology Class

The AFM in Biology Class covers a variety of life science topics. The three day class will be held February 23-25 2010. The class will be tailored to the skill level of the participants.

General topics covered

- Basic AFM operation (as demonstrated on the MFP-3D AFM)
- Biological sample preparation and interpretation of AFM data
- Choice of cantilevers
- Imaging samples in air and fluids: from molecules to cells
- Force measurements: intra molecular forces and hardness measurements
- Simultaneous AFM and optical microscopy techniques including fluorescence and phase contrast
- Recognizing artifacts

Hands-on experiments

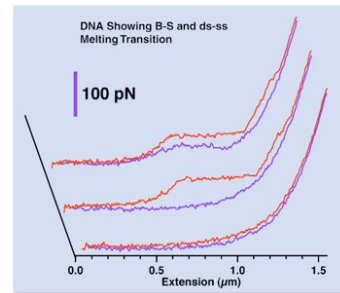
- Imaging collagen and insulin fibers in air and in liquid
- Imaging and pulling on DNA
- Pulling experiment on Titin
- Studying fixed cells

If there is time at the end of class, students may wish to image their own samples.

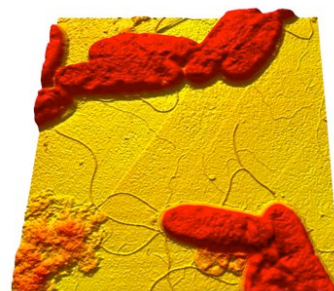
Instrumentation

All experiments will be done on the MFP-3D System. Both the MFP SA (Stand Alone) and BIO (inverted optical microscope) models will be used. There will be discussion on how an AFM works and the critical components and features that are needed for successful imaging of biological samples. Features of the MFP-3D include:

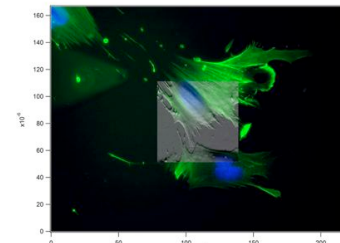
- Sensored, closed loop scanners in all three axes allowing low noise and reproducible positioning.
- Lowest noise, most accurate force curve measurements and force mechanics
- The all-digital controller allows fast, low noise and high precision calculations of the cantilever amplitude and phase.
- Wide variety of sample environment, heating and Petri dish accessories.
- Advanced 3D processing capabilities using ARgyle™, the advanced 3D rendering feature built-into the software that allows users to overlay channel data (ie. phase on topography) for in-depth investigation of images, apply specular lighting techniques, and much more.



Single tethered molecule of Lambda Digest DNA showing the B-S and the melting transition.



Shewanella oneidensis strain MR-1 cultivated under electron acceptor limitation to induce the production of electrically conductive appendages known as bacterial nanowires, 5 μm scan. Sample courtesy M. El-Naggar, USC, and Y. Gorby, J. Craig Venter Institute.



AFM deflection data (50% transparency), overlaid onto merged fluorescence optical image of fixed MRC-5 fibroblast cells, 60 μm scan.

Housing and Transportation

All housing and transportation expenses are the responsibility of the attendee.

Transportation to Mannheim

Attendees should fly into Attendees should fly to Frankfurt International Airport (FFH). Trains to Mannheim leave frequently from the Airport.

From Mannheim main station are either taxi cabs available or take the tram No. 4/No.3 to Mannheim 'Wasserturm'. Change sides and take the No.2 to Feudenheim. Leave at the station 'Am Aubuckel'. It takes about 10 min. Go right and turn left into the access road leading to backyard of the blue building with orange steel beams.

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68259 Mannheim
+49-621-762117-0 phone
+49-621-762117-11 fax
www.atomicforce.de

Hotels

Please contact us for further informations on hotels: info@atomicforce.de

Meals

All lunches, and one group dinner will be provided by Atomic Force. Coffee, tea and soft drinks will also be provided. All other meals are the responsibility of the attendee.

Mannheim Information

For additional information on Mannheim, see the web site www.mannheim.de





Registration Form

AFM in Biology Class Registration, February 23-25, 2010

To register for the AFM in Biology Class, please fill out the form and fax it to +49-621-76211711 as soon as possible as the class fills up fast. Once we have received your registration form, we will send you confirmation and additional information. Class size is limited and is based on a first-come, first-serve basis. Any questions on the class may be sent to info@atomicforce.de.

Registrant

Name _____ Title _____
University/Company _____ Dept. _____
Street _____
City _____ Postal Code _____ Country _____
Email _____ Phone _____ Fax _____

What type of AFM are you currently using? (please check all that apply)

MFP-3D Other (please list all models) _____

What subject areas are you most interested in for the class?

Imaging cells Biological sample preparation Basic AFM operation
 Force measurements Imaging molecules in fluid Simultaneous AFM & optical measurements
 Other _____

What is your level of AFM expertise as it pertains to biological applications?

I need to learn basic AFM operation. I know basic AFM operation, but need to learn more on Bio AFM
 I'm an intermediate user and know Bio AFM I'm an advanced AFM user and want to improve my AFM/Bio skills.

Payment (please check type of registration and form of payment)

Faculty, Industry Scientist, € 2,400 Student, € 1,500 Prices are net, please add 19% VAT

Purchase Order No.: _____

(Please attach a hard copy PO. Payment must be received in full before the class begins)

Bank Transfer : *Kto-Nr. 0667430605 BLZ 67080050 Dresdner Bank Mannheim*
IBAN DE56 6708 0050 0667 4306 05 SWIFT BIC DRES DE FF 670

Payment must be made in full prior to class.