

AFM in Biology Class
April 13-15, 2011

AFM in Biology Class

Now in its 13th session, the AFM in Biology Class is a three day class that will be held April 13-15, 2011. The class will cover a variety of topics and will be tailored to the skill level of the participants. The class includes morning lectures which are complementary to the afternoon hands-on experiments.

General Topics Covered

- Basic AFM operation
- Biological sample preparation and interpretation of AFM data
- Choosing cantilevers
- Imaging samples in air and fluids: from molecules to cells
- Force measurements: intramolecular forces and stiffness measurements
- Simultaneous AFM and optical microscopy techniques, including fluorescence and phase contrast
- Recognizing artifacts

Hands-on Experiments

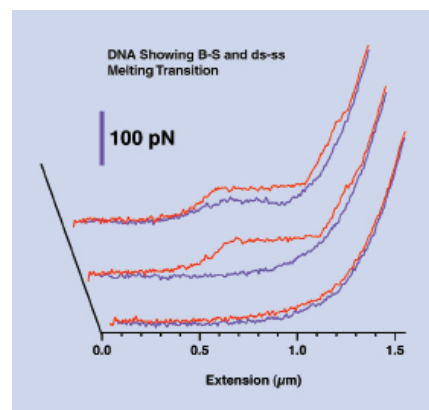
- Imaging bacteriorhodopsin
- Imaging and force measurements (pulling) on DNA
- Pulling on Titin
- Imaging and mechanically pushing lipid bilayers
- Imaging and probing fixed and living cells, including point & click individual force curves and force maps.

Students may bring their own samples to image at the end of class.

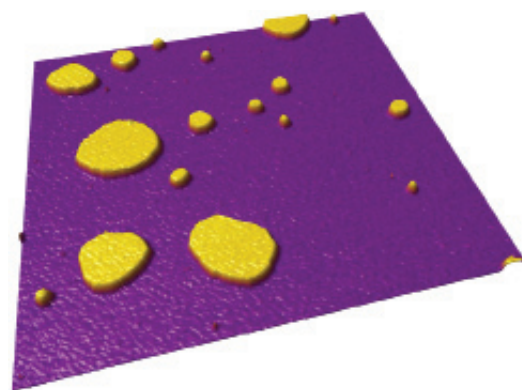
Instrumentation-New Cypher™ Lab

Experiments will be done on Asylum Research AFMs, — the MFP-3D™ Stand Alone, MFP-3D-BIO™ (integrated with an inverted optical fluorescence microscope), and a **new lab** featuring the high resolution, closed loop Cypher AFM. Discussions include how an AFM works, and the critical components and features that are needed for successful imaging of biological samples such as:

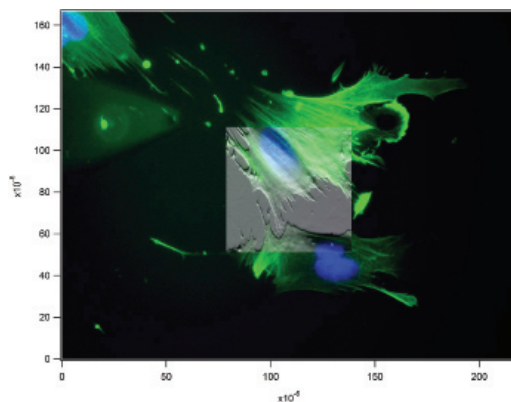
- Sensored, closed loop scanners in all three axes allowing low noise and reproducible positioning.
- Low noise, accurate force curve measurements and force mechanics.
- All-digital controller for fast, low noise and high precision calculations of the cantilever amplitude and phase.
- Wide variety of environmental, heating and Petri dish accessories.
- Advanced real-time and offline 3D processing capabilities using ARgyle™, including data channel overlay (e.g. optical data on AFM topography), specular lighting techniques to reveal image details, and much more.



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



Supported lipid bilayers (5nm tall) adsorbed onto mica and imaged in phosphate buffered saline (PBS), 2.5μm scan.



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

Housing and Transportation

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

Transportation to Santa Barbara

Attendees should fly into Santa Barbara Airport (SBA), California, which is located within minutes of Asylum Research. If you plan to fly into Los Angeles, please email us for driving directions from Los Angeles (Santa Barbara is a 1-1/2 to 2-1/2 hour drive from Los Angeles). Attendees are responsible for their own transportation to and from class. For those not renting a car, taxis are available at the airport and from the hotel.

Directions to Asylum Research from the Santa Barbara Airport

Upon exiting the airport, take a left onto Fairview Ave. Go to the first light at Hollister Ave. Take a left. Go up Hollister Ave. approximately 3/4 of a mile. Asylum Research is on the right hand side across from the airport tower, between La Patera and Robin Hill cross streets.

Asylum Research

6310 Hollister Ave.
Santa Barbara, CA 93117
805-696-6466-phone
805-696-6444-fax
www.AsylumResearch.com

Hotels

Asylum Research has set aside a block of rooms at the Best Western South Coast Inn. The price is \$120 Su-Thur, and \$135 Fri.-Sat. and includes a complimentary continental breakfast, and free WiFi. Attendees must contact Best Western directly to reserve their room. Make sure to mention the "AFM in Biology Class" from Asylum Research for the special room rate.

Best Western South Coast Inn

5620 Calle Real
Santa Barbara, CA 93117
805-967-3200-phone
805-683-4466-fax
info@bwsci.com

Directions to Best Western South Coast Inn from the Airport

Upon exiting the airport, take a left onto Fairview Ave. Stay straight on Fairview Ave. and proceed over the freeway. At the light, take a left. At the very next light, take a right onto Calle Real. Stay on this road approximately 3/4 mile. The Best Western Hotel is on the left hand side.

Meals

Continental breakfast, all lunches, and one group dinner will be provided by Asylum Research. All other meals are the responsibility of the attendee. There are restaurants within walking distance from the hotel and in the downtown Santa Barbara area (10-15 minute drive).

Dress

Santa Barbara has a very temperate climate with temperatures ranging from the 60's-70's during the day and upper 40's/50's at night. Please bring very casual, comfortable clothing and a jacket for evenings.

Santa Barbara Information

For additional information on Santa Barbara, see the web site www.santabarbara.com.



Registration Form

AFM in Biology Class Registration, April 13-15, 2011

To register for the AFM in Biology Class, please fill out the form and **fax it to 805-696-6444 as soon as possible, or email to terry@asylumresearch.com**. 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 terry@AsylumResearch.com.

Registrant

Name _____ Title _____
Company _____ Dept. _____
Street _____
City _____ State _____ Zip _____ Country _____
Email _____ Phone _____
Fax _____

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

Cypher MFP-3D MFP-1D Other (please list all models) _____

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

Imaging live 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 \$2,500 Post Doc \$1,750 Student \$1,250
 AMX Visa MC Card # _____ Expiration _____ Security Code _____
 Check (make payable to Asylum Research)
 Purchase Order# _____ (Net 30. Please attach a hard copy PO.)

All payment must be made in full prior to class.

If paying by credit card, please include credit card billing address

Name on card _____ Company _____
Street _____
City _____ State _____ Zip _____ Phone _____