Nano/Bio Interface Center

Nano/Bio Interface Center Symposium:

Local Probes at the Frontiers of Energy Systems and Biotechnology

October 26 & 27, 2011

Don Eigler

The Small Frontier

Since the early days of scanning tunneling microscopy and atomic force microscopy, a large family of probes have been developed that access properties with ever increasing complexity and relevance. This symposium will highlight recent advances that forward fundamental underpinning of critical interactions in energy systems and molecular and cellular biology with contributions from the foremost leaders in the field.

Invited speakers include:

Dawn Bonnell, University of Pennsylvania
What Local Probes of Dielectric Function Reveal About Energy Transfer

Dennis Discher, University of Pennsylvania
AFM as an Essential Tool in Cell and Molecular Biology Studies

Marija Drndic, University of Pennsylvania
Imaging of Nanocrystals with Correlated Scanning Probe and Transmission Electron Microscopy

David Ginger, University of Washington
Time-Resolved Electrostatic Force Microscopy on Organic Solar Cells

Yale E. Goldman, University of Pennsylvania
Tracking Position and Rotation of Single Fluorescent Probes for Molecular Mechanics

Sergei Kalinin, Oak Ridge National Lab
Probing reversible and irreversible electrochemistry in nanoscale volumes: batteries, fuel cells, and memristors

Lukas Novotny, University of Rochester
From Near Field Optics to Optical Antennae

Arvind Raman, Purdue University
Multi-harmonic dynamic AFM for mapping the local material properties of live cells and viruses in liquid environments

Ozgur Sahin, Columbia University
Probing Nanomechanics of Biological Systems on the Microsecond Timescale

Details:

Oct. 26, 2011: 4:00 pm to 7:00 pm
Wu & Chen Auditorium, Levine Hall
University of Pennsylvania
3330 Walnut St. Philadelphia, PA

Oct. 27, 2011: 8:30 am to 6:30 pm
Irving Auditorium
University of Pennsylvania
3401 Spruce St. Philadelphia, PA

Contact: Hong-Mei Li
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For more information, and to register, please go to:
www.nanotech.upenn.edu/events.html

Interactive posters sessions will provide a platform for extensive discussion. Participants are encouraged to submit posters, which will be eligible for inclusion in the NBIC poster competition.

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Wednesday, October 26 (Wu & Chen Auditorium, Levine Hall, 3330 Walnut St.)

4:00 PM NBIC Award for Research Excellence
Don Eigler, The Small Frontier: Future of Scanning Probe Microscopy

5:15 Reception and NanoDay@ Penn Posters

Thursday, October 27 (Irving Auditorium, 3401 Spruce St.)

8:15 AM Introduction
Dawn Bonnell, University of Pennsylvania

Local Probes in Nano/Energy
Jon Spanier, Drexel University, Session Chair

8:30 Antenna-coupled Light-matter Interactions
Lukas Novotny , University of Rochester

9:15 What Local Probes of Dielectric Function Reveal About Energy Transfer
Dawn Bonnell, University of Pennsylvania

10:00 Break

Local Probes in Nano/Energy
Jon Spanier, Drexel University, Session Chair

10:15 Time-Resolved Electrostatic Force Microscopy on Organic Solar Cells
David Ginger, University of Washington

11:00 Imaging of nanocrystals with correlated scanning probe and transmission electron microscopy
Marija Drndic, University of Pennsylvania

11:45 Probing Reversible and Irreversible Electrochemistry in Nanoscale volumes: Batteries, Fuel Cells, and Memristors
Sergei Kalinin, Oak Ridge National Laboratory

12:15 Lunch and Posters

Local Probes in Nano/Biotechnology
Rob Carpick, University of Penn, Session Chair

1:15 Multi-harmonic Dynamic AFM for Mapping the Local Material Properties of Live Cells and Viruses in Liquid Environments
Arvind Raman, Purdue University

2:00 AFM as an Essential Tool in Cell and Molecular Biology Studies
Dennis Discher, Chemical and Biomolecular Engineering Dept., University of Pennsylvania

2:45 Break

3:30 Probing Nanomechanics of Biological Systems on the Microsecond Timescale
Ozgur Sahin, Columbia University

4:15 Tracking Position and Rotation of Single Fluorescent Probes for Molecular Mechanics
Yale E. Goldman, University of Pennsylvania

5:00 Posters and Light Dinner Buffet

6:45 Poster Awards