

Program Schedule

THURSDAY, May 18

- 8:00 a.m. INFORMATION DESK OPENS, NAME BADGE AND BROCHURE / Continental Breakfast
- 8:30 a.m. OPENING REMARKS
Stephen R. Forrest
University of Michigan Vice President for Research; Professor of Physics, Electrical Engineering and Computer Science; University of Michigan
- 8:40 a.m. **SESSION 1: SINGLE MOLECULE BIOPHYSICS**
Session Chair: **Edgar Meyhofer**
Associate Professor of Mechanical Engineering and Biomedical Engineering; University of Michigan
- 8:45 a.m. Keynote: **Paul F. Barbara**
Director of the Center for Nano- and Molecular Science and Technology; Richard J.V. Johnson Welch Chair in Chemistry; University of Texas-Austin:
<http://research.cm.utexas.edu/pbarbara/>
"Evidence for Non-Two-State Kinetics in the Nucleocapsid Protein Chaperoned Opening of DNA Hairpins"
- 9:30 a.m. **Jens-Christian Meiners**
Assistant Professor of Physics; Assistant Research Scientist, Biophysics Research Division; University of Michigan
"Dynamics of Single DNA molecules"
- 9:50 a.m. **Nils G. Walter**
Associate Professor of Chemistry; University of Michigan
"Non-coding RNAs from Pathogens: Structure, Dynamics and Function Highlighted at the Single Molecule Level"
- 10:10 a.m. **Duncan G. Steel**
Director of Single Molecule Spectroscopy Laboratory for Core Technology Alliance, Michigan; Peter S. Fuss Professor of Engineering; Professor of Physics and Applied Physics; Research Scientist, Biophysics Research Division; University of Michigan
"Application of Single Molecule Spectroscopy to the Study of Protein Folding Diseases"
- 10:30-11:00 a.m. Coffee Break
- 11:00 a.m. **SESSION 2: MODELING OF SINGLE MOLECULE BEHAVIOR**
Session Chair: **Noel C. Perkins**
Arthur F. Thurnau Professor of Mechanical Engineering; University of Michigan
- 11:05 a.m. Keynote: **Rob Phillips**
Professor of Applied Physics and Mechanical Engineering; Option Representative for Biochemistry and Molecular Biophysics; California Institute of Technology:
<http://www.rpgroup.caltech.edu/>
"Tightly Bent DNA is a Fact of Life"

- 11:50 a.m. **Ioan Andricioaei**
Assistant Professor of Chemistry; Assistant Research Professor in Bioinformatics; University of Michigan
"Virtual Single Molecule Manipulations: Nucleic Acid Duplexes under External Forces and Pauling's Vindication"
- 12:10 p.m. **Ronald G. Larson**
Chair and George Granger Brown Professor of Chemical Engineering; University of Michigan
"Molecular Dynamics Simulations of Lipid-Protein Interactions"
- 12:30-2:00 p.m. Lunch, Windows Room, Palmer Commons
- 2:00 p.m. **SESSION 3: FROM SINGLE VIRUSES TO MOLECULAR MOTORS IN CELLS**
Session Chair: **Joel A. Swanson**
Professor of Microbiology and Immunology; University of Michigan Medical School
- 2:05 p.m. Keynote: **Xiaowei Zhuang**
Professor of Chemistry and Chemical Biology; Professor of Physics
Howard Hughes Medical Institute Investigator; Harvard University:
<http://zhuang.harvard.edu/>
"Visualizing Cellular Entry of Single Virus Particles"
- 2:50 p.m. **Edgar Meyhofer**
Associate Professor of Mechanical Engineering and Biomedical Engineering; University of Michigan
"Single Molecule Biophysics of the Biomolecular Motor Protein Kinesin in vitro and in vivo"
- 3:10 p.m. **Kristen J. Verhey**
Assistant Professor of Cell and Developmental Biology; University of Michigan Medical School
"Activation and Motility of Kinesin-1 in Living Cells"
- 3:30-4:00 p.m. Coffee Break
- 4:00 p.m. **SESSION 4: SINGLE MOLECULE BIONANOTECHNOLOGY**
Session Chair: **Jens-Christian Meiners**
Assistant Professor of Physics; Assistant Research Scientist, Biophysics Research Division; University of Michigan
- 4:05 p.m. Keynote: **Harold G. Craighead**
Co-Director, Nanobiotechnology Center; Charles W. Lake, Jr. Professor of Engineering; Professor of Applied and Engineering Physics; Cornell University:
http://www.aep.cornell.edu/eng10_page.cfm?pg=4&peopleID=9
"Nanostructures for Single Molecule Detection and Analysis"
- 4:50 p.m. **Alan J. Hunt**
Associate Professor of Biomedical Engineering; University of Michigan
"Microtubule Dynamics at the Nanometer Scale: Stability Persists Without a GTP-cap"
- 5:10 p.m. **James R. Baker, Jr.**
Director of the Michigan Nanotechnology Institute for Medicine and the Biological Sciences (M-NIMBS); Ruth Dow Doan Professor of Biologic Nanotechnology; Division Chief, Allergy and Clinical Immunology; Professor, Department of Internal Medicine; Professor, Department of Pathology; University of Michigan Medical School
"Quantitative Polyvalent Interactions Between Single Molecules"
- 5:30 p.m. THURSDAY SESSION CONCLUDES
- 5:45-7:30 p.m. FOR REGISTERED PARTICIPANTS: APPETIZER RECEPTION WITH CASH BAR IN THE BALLROOM OF THE MICHIGAN LEAGUE

FRIDAY, May 19

- 8:00 a.m. INFORMATION DESK OPENS, NAME BADGE AND BROCHURE / Continental Breakfast
- 8:40 a.m. OPENING REMARKS
Raymond W. Ruddon
Senior Associate Dean for Research and Graduate Studies, Medical School; Professor of Pharmacology; University of Michigan Medical School
- James E. Penner-Hahn**
Chair Biophysics Research Division; Professor of Chemistry; University of Michigan
- 9:00 a.m. **SESSION 5: SINGLE POLYMERS IN VIVO AND IN VITRO**
Session Chair: **Roger K. Sunahara**
Assistant Professor of Pharmacology; University of Michigan Medical School
- 9:05 a.m. Keynote: **Richard Superfine**
Director, Center for Computer Integrated Systems for Microscopy and Manipulation; Bowman and Gordon Gray Professor of Condensed Matter Physics, Biophysics and Microscopy; University of North Carolina-Chapel Hill:
<http://www.cs.unc.edu/Research/nano/cisimm/index.html>
"Spinning Rods and Human Lung Cell Cultures: Visualizing Polymers in Biological Shear Flows"
- 9:50 a.m. **Jason D. Kahn**
Associate Professor of Chemistry and Biochemistry; University of Maryland College Park
"Single-molecule FRET of DNA loops"
- 10:10 a.m. **Jerome P. Lynch**
Assistant Professor, Department of Civil and Environmental Engineering
Department of Electrical Engineering and Computer Science; University of Michigan
"Mechanical-Electrical Characterization of Carbon-Nanotube Thin Films for Structural Monitoring Applications"
- 10:30-11:00 a.m. Coffee Break
- 11:00 a.m. **SESSION 6: THE NEW FOCUS - LIVE CELLS AND MEMBRANES, PART I**
Session Chair: **Duncan G. Steel**
Director of Single Molecule Spectroscopy Laboratory for Core Technology Alliance; Peter S. Fuss Professor of Engineering; Professor of Physics and Applied Physics; Research Scientist, Biophysics Research Division; University of Michigan
- 11:05 a.m. Keynote: **X. Sunney Xie**
Professor of Chemistry and Chemical Biology; Harvard University:
<http://bernstein.harvard.edu/>
"New Advances in Single Molecule Enzymology and Live Cell Imaging"
- 11:50 a.m. **Roger K. Sunahara**
Assistant Professor of Pharmacology; University of Michigan Medical School
"The Incorporation of G Protein Coupled Receptors into HDL"
- 12:10 p.m. **Mark M. Banaszak Holl**
Professor of Chemistry; Professor of Macromolecular Science and Engineering; University of Michigan
"Nanoscale Hole Formation in Cell Membranes Induced by Nanoparticles"
- 12:30-3:00 p.m. POSTER SESSION and Lunch, Windows Room, Palmer Commons

- 3:00 p.m. **SESSION 7: THE NEW FOCUS - LIVE CELLS AND MEMBRANES, PART II**
Session Chair/Moderator: **Richard R. Neubig**
Professor of Pharmacology, University of Michigan Medical School
- 3:05 p.m. Keynote: **Akihiro Kusumi**
Professor, Membrane Mechanisms Project, ICORP-JST, Institute for Frontier Medical Sciences, Kyoto University:
<http://www.nanobio.frontier.kyoto-u.ac.jp/lab/e.html>
"Single-Molecule Imaging of Hop Diffusion and Transient Interaction of Membrane Molecules in the Living Cell Membrane"
- 3:50 p.m. **PANEL DISCUSSION WITH ALL KEYNOTE SPEAKERS**
"Quo Vadis - the Future of Single Molecule Tools"
- 5:00 p.m. SYMPOSIUM CONCLUDES

Closed Discussions

THURSDAY, May 18

- 8:00 pm Dinner for all Speakers, Organizing Committee, and interested Deans/Chairs
Blue Nile Ethiopian Restaurant; 221 E. Washington Ann Arbor, MI 48104; (734) 998-4746

FRIDAY, May 19

- 6:00-8:00 p.m. Dinner for Keynote Speakers, Organizing Committee, and interested Deans/Chairs
Zanzibar; 216 South State Street, Ann Arbor, MI 48104; (734) 994-7777

SATURDAY, May 20

- 9:00-11:00 a.m. Continental Breakfast for Keynote Speakers, Organizing Committee, and interested Deans/Chairs
Bell Tower Hotel