

**2nd Annual Conference on
FOUNDATIONS OF NANOSCIENCE:
SELF-ASSEMBLED ARCHITECTURES AND
DEVICES (FNANO05)**



LOCATION: [Snowbird Cliff Lodge, Snowbird, UT](#),

DATES of FNANO05: noon April 24 - noon April 28, 2005

FNANO05 Announcement: [[PDF](#)] [[TXT](#)] [[HTML](#)]

FNANO05 Webpage: <http://www.cs.duke.edu/~reif/FNANO/FNANO05/>

FNANO05 Schedule:

<http://www.cs.duke.edu/~reif/FNANO/FNANO05/FNANO05schedule.html>

FNANO05 Conference Registration page: <http://events.duke.edu/fnano>

FNANO Schedule:

Conference Reception Desk: Outside Ballroom I (1:00 PM-6:00 PM Sunday April 24)

FNANO Track on Self-Assembled Surface Chemistry

Track Chair: Lloyd Smith <smith@chem.wisc.edu>, Department of Chemistry, University of Wisconsin, Madison, WI

CoChair: Paul Weiss <stm@psu.edu>, Pennsylvania State University, University Park, PA

FNANO Track on Self-Assembled Surface Chemistry, Session A (1:00 PM-1:35 PM Sunday April 24): Ballroom I

1:00 PM-1:30 PM Track Keynote Talk: Creating Nanostructures through Self- and Directed Assembly,

Speaker: Paul Weiss <stm@psu.edu>, Pennsylvania State University, University Park, PA

(5 min question period after talk)

**Refreshments & Self-Assembled Surface Chemistry Posters (1:35 PM-2:25PM
Sunday April 24): Outside Ballroom I**

Poster: Surface modification and functionalization of polymer coated colloidal nanocrystals with poly(ethylene glycol)

Presenter: Ralph A. Sperling and Teresa Pellegrino, Center for NanoScience, Ludwig-Maximilians-Universität München, Munich, Germany

Jimmy K. Li, Center for NanoScience, Ludwig-Maximilians-Universität München, Munich, Germany and Center for Nano Biomedicine Technology, Department of Biomedical Engineering, Chung-Yuan Christian University, Taiwan

Walter H. Chang, Center for Nano Biomedicine Technology, Department of Biomedical Engineering, Chung-Yuan Christian University, Taiwan

Wolfgang J. Parak, Center for NanoScience, Ludwig-Maximilians-Universität München, Munich, Germany

Poster: Bio-inspired template-free synthesis of a highly doped photoconductive thin film of Cobalt hydroxide with an exceptionally long minority carrier half-life.

Presenter: Kris Roth<Rothkm@gmail.com>, 8716 Sand Point Way NE Apt.# 10, Seattle, WA 98115

Authors:

Kristian Roth, University of California Santa Barbara

Daniel Morse, University of California Santa Barbara

**FNANO Track on Self-Assembled Surface Chemistry, Session B (2:25PM-4:05PM
Sunday April 24): Ballroom I**

2:25PM-2:45PM Invited Talk: The neurochip: An advanced nanomaterial for the development of novel biosensors and functionally-directed proteomics

Speaker: Anne Milasincic Andrews <ama@chem.psu.edu>, Department of Chemistry and Department of Physics, The Pennsylvania State University, University Park, PA

Authors: Anne Milasincic Andrews <ama11@psu.edu>, Matthew E. Szapacs, Ann-Sofie Cans, Amit Vaish, Jennifer L. Han, Mary E. Anderson and P. S. Weiss.

2:50PM-3:10PM Invited Talk: Self-Assembly and Molecular Electronics of Two Terminal Devices

Speaker: Ranganathan Shashidhar <rshashidhar@geo-centers.com>

Corporate R&D Center, Geo-Centers, Inc., Arlington, VA 22203

Authors:

R. Shashidhar, Geo-Centers, Inc., 4301 N Fairfax Drive, Suite 200, Arlington, VA 22203

Jim Kushmerick, Code 6900, Naval Research Laboratory, Washington, DC 20375

David Long, Geo-Centers, Inc., 4301 N Fairfax Drive, Suite 200, Arlington, VA 22203

Amy Blum, Geo-Centers, Inc., 4301 N Fairfax Drive, Suite 200, Arlington, VA 22203

3:15PM-3:35PM Contributed Talk: Self-Assembled Biomolecule Nanopatterns
Contact: Bo Gao <bgao@nd.edu>, Department of Chemistry and Biochemistry
University of Notre Dame, 251 Nieuwland Science Hall, Notre Dame, IN 46556

Authors:

Bo Gao, Department of Chemistry and Biochemistry, University of Notre Dame
Mary Finn, Department of Chemistry and Biochemistry, University of Notre Dame
Patricia Clark, Department of Chemistry and Biochemistry, University of Notre Dame
Marya Lieberman, Department of Chemistry and Biochemistry, University of Notre Dame

3:40PM-4:00PM Contributed Talk: Surface Immobilized DNAzyme for Triggered Response of Monolayers

Contact: Daryl P. Wernette <dwernett@uiuc.edu> 405 N. Mathews Beckman Institute
Urbana, IL 61801

Authors:

Daryl P. Wernette, University of Illinois (Urbana-Champaign)
Carla Swearingen, University of Illinois (Urbana-Champaign)
Yi Lu, University of Illinois (Urbana-Champaign)

(5 min question period after talks)

FNANO Track on Nano-Optics

Track Chair: Harry Atwater <haa@its.caltech.edu>, California Institute of Technology, Pasadena, CA

Refreshments & Nano-Optics Posters (4:05PM-4:45PM Sunday April 24): Outside Ballroom I

Poster: Nanophotonic waveguides by DNA mediated self-assembly of quantum dots
Presenter: Chia-Jean Wang <jeanwang@ee.washington.edu>, Univ. of Washington, EE Dept. Allen Center, Box 352500, Seattle, WA 98195

Authors:

Chia-Jean Wang, Univ. of Washington
Lih Y. Lin, Univ. of Washington
Babak A. Parviz, Univ. of Washington

FNANO Track on Nano-Optics (4:45PM-6:00PM Sunday April 24): Ballroom I

4:45PM-5:05PM Invited Talk: Exploiting wavelength and sub-wavelength-scale optical resonances in nanophotonics

Speaker: Shanhui Fan <shanhui@stanford.edu>, Ginzton Laboratory, AP 273,
Department of Electrical Engineering, Stanford, CA 94305

Authors:

Shanhui Fan, Stanford University
Mehmet Fatih Yanik, Stanford University
Wonjoo Suh, Stanford University
Jung-Tsung Shen, Stanford University

Peter Catrysse, Stanford University
Zheng Wang, Stanford University
(5 min question period after talk)

5:10PM-5:30PM Invited Talk: One-Dimensional Nanostructures as Subwavelength Optical Elements for Photonics Integration
Speaker: Peidong Yang <p_yang@berkeley.edu>, Department of Chemistry University of California, Berkeley, CA 94720
Authors: Peidong Yang, University of California, Berkeley

5:35PM-5:55PM Invited Talk: Control of Spontaneous and Stimulated Emission in Wide Bandgap Semiconductor Nanoarrays
Speaker: Arto Nurmikko <Arto_Nurmikko@brown.edu>, Department of Engineering and Physics, Brown University, Providence, RI
Authors: Arto.V. Nurmikko., Y.-K. Song, and J.-H. Song, Department of Engineering and Physics, Brown University, Providence, RI
and Jung Han, Department of Electrical Engineering, Yale University, New Haven, Connecticut 06520, USA

Reception & All Posters of Day (6:00PM-7:00PM, Sunday, April 24, 2005): Outside Ballroom I

FNANO Track on Principles and Theory of Self-Assembly
Track Chair: Leonard Adleman <adleman@usc.edu>, Laboratory for Molecular Science, University of Southern California. Los Angeles, CA
coChair: Paul Rothemund <pwkr@centrosome.dna.caltech.edu>, Department of Computer Science, and Department of Computation and Neural Systems, California Institute of Technology, Pasadena, CA

FNANO Track on Principles and Theory of Self-Assembly Session A(8:00AM-9:00AM Monday, April 25) : Ballroom II

8:00AM-8:30AM Track Keynote Talk: Solvent fluctuations in action: drying-mediated self assembly of nanoparticles
Speaker: Phillip Geissler, <geissler@cchem.berkeley.edu>, 207 Gilman, Dept. of Chemistry, UC Berkeley, Berkeley, CA 94720

8:35AM-8:55AM Invited Talk: Exploiting anisotropy for building-block assembly
Speaker: Mark Horsch <mhorsch@engin.umich.edu>
Authors: Sharon Glotzer <sglotzer@umich.edu> and Mark Horsch, Department of Chemical Engineering, University of Michigan, Room 3406, G.G. Brown Building 2300 Hayward St. Ann Arbor, MI 48109-2136
(5 min question period after talks)

Continental Breakfast & Posters on Principles and Theory of Self-Assembly (9:00AM-10:30AM Monday, April 25): Outside Ballroom II

Poster: Bio-CAD Tools for DNA-Based Self-Assembly and Computing

Authors:

Zbigniew Sikorski <zs@cfdrc.com>, Zbigniew Sikorski, CFD Research Corporation, 215 Wynn Drive, Huntsville, AL 35805

Zhijian Chen, CFD Research Corporation

Mahesh Athavale, CFD Research Corporation

Andrzej Przekwas, CFD Research Corporation

Anthony Macula, SUNY Geneseo, Geneseo, NY

Morgan Bishop, Jeansee Corp., Geneseo, NY

Clare Thiem, Air Force Research Lab., Rome, NY

Poster: A Family of Conceptual Problems in the Automated Design of Systems Self-Assembly

Presenter: Natalio Krasnogor <Natalio.Krasnogor@Nottingham.ac.uk>, Automated Scheduling, Planning and Optimization Group, School of Computer Sciences and Information Technology, Jubilee Campus, University of Nottingham, Nottingham, NG81BB, United Kingdom

Authors:

Natalio Krasnogor, University of Nottingham

Steven Gustafson University of Nottingham

Poster: Similarity Analysis of Polypeptides Generated Via Directed Evolution

Contact : Ersin Emre <eeoren@u.washington.edu>, Materials Science and Engineering, Roberts Hall, Box: 352120, University of Washington
Seattle, WA 98195, USA.

Authors:

Ersin Emre Oren, Materials Science and Engineering, University of Washington

Ram Samudrala, Computational Genomics Group, Department of Microbiology, School of Medicine, University of Washington

Deniz Sahin, Materials Science and Engineering, University of Washington

Sevil Dincer, Materials Science and Engineering, University of Washington

Candan Tamerler, Molecular Biology and Genetics, Istanbul Technical University

Mehmet Sarikaya <sarikaya@u.washington.edu>, Materials Science and Engineering, University of Washington

Poster: Comparison between unique addressing and programmable self-assembly

Presenter: Bjorn Hogberg <bjorn.hogberg@miun.se>, Mid Sweden University, Dept. of Physics, SE-851 70 Sundsvall, SWEDEN

Authors:

Bjorn Hogberg, Mid Sweden University

Hokan Olin, Mid Sweden University

Poster: DNA Codeword and Library Design

Authors:

Morgan Bishop, Anthony Macula, Wendy Pogozelski, and

Thomas Renz, Air Force Research Laboratory, Rome, NY

Poster: Toward Enzyme-Free Replication and Evolution of Information Using DNA Crystals

Rebecca Schulman <rebecka@caltech.edu>

Rebecca Schulman, CalTech

Erik Winfree, California Institute of Technology

Poster: Stochastic yield analysis of self-assembling

Edward Coffman <egc@ee.columbia.edu>, Electrical Engineering Dept., 1312 Mudd Bldg., 500 W. 120th St., New York, NY 10025

Authors:

Yuliy Baryshnikov, Bell Labs

Ed Coffman, Columbia University

Teddy Yimwadsana, Columbia University

Poster: Controlling Tecto-RNA Self-assembly to form Nano-filaments

Neocles Leontis <leontis@bgnet.bgsu.edu>, Bowling Green State University, Bowling Green, OH

Authors:

Neocles Leontis, Bowling Green State University

Luc Jaeger, UC Santa Barbara

Lorena Nasalean, Bowling Green State University

Marina Mirzoyan, Bowling Green State University

Stephanie Baudrey, UC Santa Barbara

FNANO Track on Principles and Theory of Self-Assembly Session B: Ballroom II(10:30AM-11:45AM Monday, April 25): Ballroom II

10:30AM-10:50AM Invited Talk: Self-Healing Tile Sets

Speaker: Erik Winfree <winfree@caltech.edu>, 1200 E. California Blvd, Caltech, Pasadena, CA 91125

10:55AM-11:15AM Contributed Talk: Complexity of Graph Self-Assembly in Accretive Systems and Self-Destructible Systems

Speaker: Peng Yin <py@cs.duke.edu>, Duke University

Authors: John H. Reif, Sudheer Sahu, and Peng Yin <py@cs.duke.edu>, Duke University

11:20AM-11:40AM Invited Talk: Computerized exhaustive search for optimal self-assembled counters,

Speaker: Pablo Moisset de Espanes <pmoisset@usc.edu>, University of Southern California

(5 min question period after talks)

FNANO Track on Self-assembly Across Scales

Track Chair: Karl Bohringer <karl@ee.washington.edu>, Department of Electrical

Engineering, University of Washington, Seattle, WA
coChair: Babak Amir Parviz <babak@ee.washington.edu>, Department of
Electrical Engineering, University of Washington, Seattle, WA

Track on Self-assembly Across Scales, Session A (11:45AM-12:20PM Monday, April 25) Ballroom II

11:45AM-12:15PM Track Keynote Talk: Molecules and Molecular Mimetics in Nano through Macroscale Self-Assembly

Speaker: Thomas Clark<thomas.clark@nrl.navy.mil>, Naval Research Laboratory, Division of Chemistry, 4555 Overlook Avenue SW, Washington, DC 20375

Authors: Thomas Clark, Naval Research Laboratory

(5 min question period after talk)

Lunch: (12:25PM-1:25PM Monday, April 25): Aerie Restaurant (level 10 of Cliff Lodge)

Track on Self-assembly Across Scales, Session B (1:25PM-2:00PM Monday, April 25): Ballroom II

1:25PM-1:45PM Invited Talk: Using Capillary Forces for Self-Assembly of Functional Microstructures

Speaker: [Babak Amir Parviz](mailto:Babak@u.washington.edu) <Babak@u.washington.edu>, University of Washington, Electrical Engineering, Mailstop 352500, Seattle, WA 98195-2500

Authors: [Babak Amir Parviz](mailto:Babak@u.washington.edu) <Babak@u.washington.edu>, Christopher Morris <cjmorris@u.washington.edu>,
Sean Stauth, University of Washington

(5 min question period after talk)

Refreshments & Self-assembly Across Scales Posters (1:50PM-3:00PM Monday, April 25): Outside Ballroom II

Poster: Design and assembly of double cross-over linear arrays of micrometre length using rolling circle replication

Presenter: Daniel Lubrich<d.lubrich1@physics.ox.ac.uk>, Clarendon Laboratory, Parks Road, Oxford OX1 3PU, UK

Authors:

Daniel Lubrich, University of Oxford

Jonathan Bath, University of Oxford

Andrew Turberfield, University of Oxford

Poster: Merging electrochemical science and self-assembly for nano/microfabrication

Presenter: Daniel Schwartz<dts@u.washington.edu>, Department of Chemical Engineering, Box 351750 University of Washington, Seattle, WA 98195-1750

Authors:

Daniel Schwartz, University of Washington

Daniel Allred, University of Washington
Haixia Dai, University of Washington
Oludare Ogunyemi, University of Washington
Mehmet Sarikaya, University of Washington
Francois Baneyx, University of Washington

Poster: Self-Assembly of Flat Micro Components by Capillary Forces and Shape Recognition

Presenter: Jiandong Fang<jdfang@u.washington.edu>, University of Washington, Department of Electrical Engineering, Campus Box 352500, Seattle, WA 98195-2500

Authors:

Jiandong Fang, University of Washington
Sheng-Hsiung Liang, University of Washington
Kerwin Wang, University of Washington
Xiaorong Xiong, University of Washington
Karl Böhringer, University of Washington

Poster: Graph Grammars and Robotic Self Assembly

Presenter: Eric Klavins<klavins@ee.washington.edu>, Electrical Engineering, University of Washington, Campus Box 352500, Seattle, WA 98195

Authors:

Nils Napp, University of Washington
Josh Bishop, University of Washington
Eric Klavins, University of Washington

Poster: Formation of Two-Dimensional Colloidal Sphere Arrays on Micro-Patterns

Presenter: Neil Bernotski<nbernots@ee.washington.edu>, University of Washington, Department of Electrical Engineering, Paul Allen Center - Room AE100R, Campus Box 352500, Seattle, WA 98195-2500

Authors:

Neil Bernotski, Department of Electrical Engineering, University of Washington
Xiaorong Xiong, Department of Electrical Engineering, University of Washington
Kerwin Wang, Department of Electrical Engineering, University of Washington
Nels Jewell-Larsen, Department of Electrical Engineering, University of Washington
Karl Bohringer, Department of Electrical Engineering, University of Washington

Track on Self-assembly Across Scales, Session C (3:00PM-3:25PM Monday, April 25): Ballroom II

3:00PM-3:20PM Contributed Talk: Molecular liftoff of nanoparticles, molecules, and biomolecules

Speaker: Marya Lieberman<mliieberm@nd.edu>, Department of Chemistry and Biochemistry, 251 NSH, University of Notre Dame, Notre Dame IN 46556

Authors:

Bo Gao, University of Notre Dame
Marya Lieberman, University of Notre Dame

(5 min question period after talk)

FNANO Track on Peptide Self-Assembly

Track Chair: Reza Ghadiri <ghadiri@scripps.edu>, Department of Chemistry, Beckman Center for Chemical Sciences, Scripps Research Institute, La Jolla, CA

Track coChair: Mehmet Sarikaya <sarikaya@u.washington.edu>, Materials Science and Engineering, University of Washington, Seattle, WA

**Track on Peptide Self-Assembly, Session A (3:25PM-4:00PM Monday, April 25)
Ballroom II**

3:25PM-3:55PM Track Keynote Talk: Synthetic Biology – Genetically Engineered Proteins for Materials Science

Speaker: Mehmet Sarikaya <sarikaya@u.washington.edu>, Materials Science and Engineering, Roberts Hall, Box: 352120, University of Washington, Seattle, WA 98195, USA

Authors: Mehmet Sarikaya, University of Washington

(5 min question period after talk)

Refreshments & Track 4 Posters (4:00PM-5:10PM Monday, April 25): Outside Ballroom II

Poster: Genetically Engineered Gold Binding Polypeptide for Micron-Scale Self-Assembly

Presenter: Xiaorong Xiong<xrxiong@u.washington.edu>, Dept. of Electrical Engineering Box 352500, University of Washington Seattle, WA 98195-2500

Authors:

Mustafa Gungormus, Material Science and Engineering Dept. Univ. of Washington

Xiaorong Xiong, Department of Electrical Engineering, Univ. of Washington

Turgay Kacar, Material Science and Engineering Dept. Univ. of Washington, Molecular Biology-Genetics, Istanbul Technical University, Istanbul, Turkey

Candan Tamler, Material Science and Engineering Dept. Univ. of Washington, Molecular Biology-Genetics, Istanbul Technical University, Istanbul, Turkey

Babak Parviz, Department of Electrical Engineering, Univ. of Washington

Mehmet Sarikaya, Material Science and Engineering Dept. Univ. of Washington

Poster: Recognition and Binding of Inorganics Specific Engineered Polypeptides

Presenter: Candan Tamerler<candan@u.washington.edu>, <tamerler@itu.edu.tr>, University Of Washington, Materials Science & Engineering, Roberts Hall, Box: 353120, Seattle 98195, WA, USA

Authors:

Candan Tamerler, University of Washington, Materials Science & Eng. & Istanbul Technical University, Molecular Biology& Genetics

Mehmet Sarikaya, University of Washington, Materials Science & Eng.

Poster: Chemically Controlled Self-Assembly of Protein Nanorings

Presenter: Carston Wagner<wagne003@umn.edu>, University of Minnesota Dept. Medicinal Chemistry, 308 Harvard St. SE, 8-174 Weaver-Densford Hall
Minneapolis, MN 55455

Authors:

Carston Wagner, University of Minnesota
Jonathan Carlson, University of Minnesota
Sidhartha Jena, University of Minnesota
Tsui-fen Chou, University of Minnesota
Michelle Flenniken, Montana State University
Jessie Kerns, University of Minnesota
Ronald Siegel, University of Minnesota

Poster: Universal Detection System Based on an Allosteric Aptamer, Signal Amplification Cascade, and an Eye-Detectable Phase Transition.

Presenter: Nickolas Chelyapov<chelyapo@usc.edu>, USC/Molecular Biology, SHS172, 835 W. 37th St., Los Angeles, CA 90089

Authors: Nickolas Chelyapov, University of Southern California

**Track on Peptide Self-Assembly, Session B (5:10PM-6:00PM Monday, April 25)
Ballroom II**

5:10PM-5:30PM Invited Talk: Computational engineering of peptide-based bionanostructures

Speaker: Ram Samudrala <me@ram.org>, Department of Microbiology, University of Washington, Seattle

5:35PM-5:55PM Invited Talk: Designed proteins with nanonatural chemical groups, assembly and function.

Speaker: Philip Dawson <dawson@scripps.edu>, Chemistry, Scripps Institute, La Jolla, CA

(5 min question period after talk)

Reception & All Posters of the Day (6:00PM-7:00PM Monday, April 25): Golden Cliff Room

Dinner: (7:00PM-8:00PM, Monday, April 25): Ballroom I

Desserts & Session on Nanoscience Business (8:00PM-9:00PM, Monday, April 25): Ballroom I

Track Chair: Mark A. Parsells <mparsells@montpelierventures.com>, Montpelier Ventures, LLC, Montchanin, DE

Track coChair: Doug Jamison <doug@TinyTechVC.com>, President and CEO, Harris & Harris Group, New York, NY

Other Panel Members:

Mike Knapp, CEO of Cambrios Technologies Corp., Mountain View, California

Mike Janse, ARCH Venture Partners, Inc., Seattle, WA

John Monahan, founded and prior President and CEO of Avigen, Inc., Alameda, CA

This session will consist of brief presentations and interactive Q & A with the audience led by a panel of corporate officers of a number of Venture Capital companies investing in Nanotechnology.

FNANO Track on Viral Self-Assembly

Track Chair: M.G Finn <mgfinn@scripps.edu>, Department of Chemistry and The Skaggs Institute for Chemical Biology, Scripps Research Institute, La Jolla, CA

Track coChair: Morley Stone <mstone@darpa.mil>, DARPA/DSO, Arlington, VA

Track on Viral Self-Assembly, Session A (8:00AM-8:35AM Tuesday, April 26): Ballroom II

8:00AM-8:30AM Invited Talk: Electrostatic self-assembly of biomolecular components

Speaker: Gerard Wong <gclwong@uiuc.edu>, Materials Science & Engineering Dept., University of Illinois, 1304 W. Green St, Urbana, IL 61801

Authors: Gerard Wong, University of Illinois at Urbana-Champaign

http://www.rpi.edu/dept/nsec/researchers_wong.html

(5 min question period after talk)

Continental Breakfast & Viral Self-Assembly Posters (8:35AM-9:25AM Tuesday, April 26): Outside Ballroom II

Poster: Biomimetic mineralization inside an engineered viral protein cage and self assembly the protein cage into two dimensional arrays

Contact: Mark Allen <allenm@chemistry.montana.edu>, Montana State University Department of Chemistry and Biochemistry, 108 Gaines Hall, Bozeman, MT 59717

Authors:

Mark Allen, Montana State University

Michael Klem, Montana State University

Peter Suci, Montana State University

Debbie Willits, Montana State University

Mark Young, Montana State University

Trevor Douglas, Montana State University

Poster: Site Directed Spin Labeling Cowpea Chlorotic Mottle Virus to Probe Particle Dynamics

Contact: Robert Usselman <usselman@chemistry.montana.edu>, Department of Chemistry and Biochemistry, 108 Gaines Hall, Montana State University, Bozeman, Mt 59717

Authors:

Robert Usselman, Montana State University-Chemistry and Biochemistry

Debbie Willits, Montana State University-Plant Sciences

Trevor Douglas, Montana State University-Chemistry and Biochemistry
Mark Young, Montana State University-Plant Sciences
Eric Walter, Montana State University-Chemistry and Biochemistry
David Singel, Montana State University-Chemistry and Biochemistry

Poster: Protein Encapsulated Synthetic Hydrogenase Mimic

Contact: Zachary Varpness<zvarpness@chemistry.montana.edu>, Gaines Hall RM 231,
Bozeman, Mt 59717

Authors:

Zachary Varpness, Montana State University
Debbie Willits, Montana State University
John Peters, Montana State University
Mark Young, Montana State University
Trevor Douglas, Montana State University

Poster: Design of Scaffolds with Tunable Dimensions from Tobacco Mosaic Virus

Contact: David Lee<dave.lee@tufts.edu>, Dept. of Chemistry, Tufts University, 62
Talbot Ave., Medford, MA 02155

Authors:

Xiaorong Fu, Tufts University
Gerald Stubbs, Vanderbilt University
David Lee, Tufts University

**Track on Viral Self-Assembly, Session B (9:25AM-10:15AM Tuesday, April 26) :
Ballroom II**

9:25AM-9:45AM Invited Talk: Strategies and Lessons in Protein Self-Assembly from
Natural Structures and Protein Crystals

Speaker: Todd Yeates<yeates@mbi.ucla.edu> UCLA Department of Chemistry and
Biochemistry, 611 Charles Young Dr. East, Los Angeles, CA 90095-1569

Authors: Todd Yeates, Janel Laidman, Rey Banatao, Yingsu Tsai, Cheryl, Kerfeld, &
Chris Crowley, UCLA Department of Chemistry and Biochemistry and the
California Nanosystems Institute

9:50AM-10:10AM Invited Talk: Self-Assembling Biological Structures with Engineered
Functionalities

Speaker: Rajesh Naik <rajesh.naik@wpafb.af.mil>, Materials and Manufacturing
Directorate, Air Force Research Laboratory, Wright-Patterson-AFB, OH 45433

Authors: Ryan Kramer, Joseph Slocik, Lawrence Drummy, Morley Stone, & Rajesh
Naik, Air Force Research Laboratory

(5 min question period after talks)

Track on Molecular Electronics Devices

**Track Chair: Mark Ratner <ratner@chem.northwestern.edu>, Chemistry
Department, Northwestern University, Evanston IL**

coChair: David Bocian <david.bocian@ucr.edu>, Department of Chemistry

University of California, Riverside, CA

Track on Molecular Electronics Devices, Session A (10:15AM-12:05PM Tuesday, April 26): Ballroom II

10:15AM-10:45AM Track Keynote Talk: Bring together solution chemistry and molecular electronics: a single molecule switch

Speaker: Stuart Lindsay<Stuart.Lindsay@asu.edu>, Biodesign Institute, Arizona State University, Tempe, AZ 85287-5601

<http://green.la.asu.edu/>

Author: Stuart Lindsay, Arizona State University

10:50AM-11:10AM Invited Talk: Structural control of Conductance in Carbon/molecule/Metal Molecular Electronic Junction

Speaker: Richard McCreery<mccreery.2@osu.edu>, Department of Chemistry, Ohio State University, 100 W 18th Avenue, Columbus Ohio, 43210

Author: Richard McCreery, Franklin Anariba, Prasad Kalakodimi, Jeremy Steach, Ohio State University

11:20AM-11:40PM Contributed Talk: Thermodynamic Signatures of Bistable Molecules from Devices to the Solution Phase

Speaker: A H Flood

Authors:

A H Flood, California NanoSystems Institute and Department of Chemistry and Biochemistry, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, California, 90095-1569 (USA)

J W Choi, Division of Chemistry and Chemical Engineering (127-72), California Institute of Technology, Pasadena, California, 91125 (USA)

A J Peters, California NanoSystems Institute and Department of Chemistry and Biochemistry, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, California, 90095-1569 (USA)

D W Steurman, Division of Chemistry and Chemical Engineering (127-72), California Institute of Technology, Pasadena, California, 91125 (USA)

S A Vignon, Division of Chemistry and Chemical Engineering (127-72), California Institute of Technology, Pasadena, California, 91125 (USA)

J O Jeppesen and S Nygaard, Department of Chemistry, Odense University (University of Southern Denmark), Campusvej 55, 5230, Odense M (Denmark)

H-R Tseng, California NanoSystems Institute and Department of Chemistry and Biochemistry, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, California, 90095-1569 (USA)

J R Heath, Division of Chemistry and Chemical Engineering (127-72), California Institute of Technology, Pasadena, California, 91125 (USA)

J F Stoddart, California NanoSystems Institute and Department of Chemistry and Biochemistry, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, California, 90095-1569 (USA)

(5 min question period after talks)

Lunch: (12:05PM -1:05PM Tuesday, April 26): Aerie Restaurant (level 10 of Cliff Lodge)

Track on Molecular Electronics Devices, Session B (1:05PM-1:30PM Tuesday, April 26): Ballroom II

1:05PM-1:25PM Invited Talk: Molecular Conductance Through Extended Organometallic Frameworks

Speaker: Lawrence Sita, <lsita@umd.edu>, <Ls214@umail.umd.edu> Department of Chemistry and Biochemistry University of Maryland College Park, MD 20742

Authors:

Chaiwat Engtrakul, University of Maryland

Lixin Wang, University of Maryland

Stephanie Getty, University of Maryland

Rui Liu, Duke University

San-Huang Ke, Duke University

Harold Baranger, Duke University

Weitao Yang, Duke University

Michael Fuhrer, University of Maryland

Lawrence Sita, University of Maryland

(5 min question period after talk)

Refreshments & Molecular Electronics Devices Posters (1:30PM-2:40PM Tuesday, April 26): Outside Ballroom II

Poster: DNA Derivative Transistors

Presenter: Marina Lyshevski<E.Lyshevski@rit.edu>, Microsystems and Nanotechnologies, Webster, NY 14580

Author: Marina Lyshevski, Microsystems and Nanotechnologies

Poster: Direct Deposition of Molecular Electronics Materials through Thermal Dip Pen Nanolithography

Presenter: Paul Sheehan<sheehan@nrl.navy.mil>Naval Research Laboratory, Code 6177, 4555 Overlook Ave, SW, Washington, DC 20375

Author:

Paul Sheehan, Naval Research Laboratory

Minchul Yang, Naval Research Laboratory

Brent Nelso, Georgia Institute of Technology

William King, Georgia Institute of Technology

Lloyd Whitman, Naval Research Laboratory

Poster: Electromigration-induced gold nanogaps for single-molecular electronics

Presenter: Marius Trouwborst<M.L.Trouwborst@rug.nl>, Physics of Nanodevices, Rijksuniversiteit Groningen, Nijenborgh 49747 AG Groningen, The Netherlands

Author:

Marius Trouwborst, Physics of Nanodevices, Rijksuniversiteit Groningen
Sense Jan van der Molen, Physics of Nanodevices, Rijksuniversiteit Groningen
G ten Brink, Dept. of applied physics
J.T.H.M. de Hosson, Dept. of applied physics
B.J. van Wees, Physics of Nanodevices, Rijksuniversiteit Groningen

Poster: Brownian Ionic and Neurotransmitter Dynamics and Its Application in Nanobioelectronics

Presenter: Marina Lyshevski<Sergey.Lyshevski@rit.edu>, Marina Lyshevski,
Microsystems and Nanotechnologies, Webster, NY 14580
Author: Marina Lyshevski, Microsystems and Nanotechnologies

Poster: Carbon-Centered Quantum Nanoelectronics: Novel Electronic Nanodevices and Their Analysis

Presenter: Sergey Lyshevski<Sergey.Lyshevski@rit.edu>, Sergey Lyshevski,
Department of Electrical Engineering, Rochester Institute of Technology, Rochester, NY
14623
Author:
Sergey Lyshevski, Rochester Institute of Technology
Thomas Renz, Air Force Research Laboratory, Rome, NY

Poster: DNA Code Word Library Design Using a Parallel Genetic Algorithm

Presenter: Dan Burns<burnsd@rl.af.mil>, AFLR/IFTC, 26 Electronic Blvd., Rome NY
13440-4514
Author:
Daniel Burns, Air Force Research Laboratory/IFTC
Kevin May, Clarkson College and AFRL/IFTC
Morgan Bishop, JEANSEE Corp., Geneseo, NY

Poster: Quantum Effects Incorporation into Monte Carlo Device Simulators for Modeling Nano-Scale Devices

Presenter: Dragica Vasileska<vasileska@asu.edu>, Dragica Vasileska, Associate
Professor, Department of Electrical Engineering, Arizona State University, Tempe, AZ
85287-5706
Author:
Dragica Vasileska, Arizona State University
Shaikh Shahid Ahmed, Purdue University, West Lafayette
Christian Ringhofer, Arizona State University

Poster: One-way switching of photochromic molecules self-assembled on gold

Presenter: Sense Jan van der Molen<s.j.van.der.molen@rug.nl>, Physics of Nanodevices
Materials Science Center, Rijksuniversiteit Groningen Nijenborgh 4, 9747 AG
Groningen, The Netherlands
Author:
Sense Jan van der Molen, Physics of Nanodevices, Materials Science Center,
Rijksuniversiteit Groningen, Groningen, The Netherlands

Marius L. Trouwborst, Physics of Nanodevices, Materials Science Center, Rijksuniversiteit Groningen, Groningen, The Netherlands
Diana Dulic, Physics of Nanodevices, Materials Science Center, Rijksuniversiteit Groningen, Groningen, The Netherlands
Henri van der Vegte, Physics of Nanodevices, Materials Science Center, Rijksuniversiteit Groningen, Groningen, The Netherlands
Ishan Amin, Physics of Nanodevices, Materials Science Center, Rijksuniversiteit Groningen, Groningen, The Netherlands
Tibor Kudernac, Organic and Molecular Inorganic Chemistry, Materials Science Center, Rijksuniversiteit Groningen, Groningen, The Netherlands
Ben L. Feringa, Organic and Molecular Inorganic Chemistry, Materials Science Center, Rijksuniversiteit Groningen, Groningen, The Netherlands
Bart J. van Wees, Physics of Nanodevices, Materials Science Center, Rijksuniversiteit, Groningen, Groningen, The Netherlands

Poster: Ligand stabilized magnetic nanoparticles for applications in bottom-up granular structures and biotechnology

Presenter: Inga Ennen<ennen@physik.uni-bielefeld.de>, University of Bielefeld, Universitaetsstr. 25, 33615 Bielefeld, Germany

Authors:

Inga Ennen, University of Bielefeld, Klaus Wojczykowski, Peter Jutzi, JGünter Reiss, & Andreas Hütten, University of Bielefeld, Department of Physics

Poster: Electrical conductance through single-molecule junction

Presenter: Kamil Walczak<walczak@amu.edu.pl>

Author: Kamil Walczak, Institute of Physics, Adam Mickiewicz University
Sergey Lyshevski, Department of Electrical Engineering, Rochester Institute of Technology

Poster: New molecular electronic devices: soluble stacked and side-by-side phthalocyanine dimers

Wei He<whe@nd.edu>, Department of Chemistry and Biochemistry, 275 NSH, University of Notre Dame, Notre Dame, IN, 46556

Author: Wei He, University of Notre Dame

Zhiyong Li, Hewlett-Packard Laboratories

Marya Lieberman, University of Notre Dame

Track on Molecular Electronics Devices, Session C (2:40PM-3:30PM Tuesday, April 26): Ballroom II

2:40PM-3:00PM Invited Talk: Integration of Molecular Components into Silicon Memory Devices

Speaker: Werner G. Kuhr, <werner.kuhr@zettacore.com>, ZettaCore, Inc., 369 Inverness Pkwy, Suite 350, Englewood, CO 80112

Author: Werner Kuhr, Craig Rhodine, Ritu Shrivastava, ZettaCore,

Inc.<http://zettacore.com>

3:05PM-3:25PM Contributed Talk: Switching Properties of Molecular Quantum Cellular Automata Cells

Speaker: Thomas P. Fehlner<fehlner.1@nd.edu>, Department of Chemistry & Biochemistry, University of Notre Dame, 251 Nieuwland Science Hall, Notre Dame, IN 46556-5670

Authors: Thomas P. Fehlner, Hua Qi, Zhaohui Li, Sharad Sharma, Gregory L. Snider, Alexei O. Orlov, & Craig S. Lent, University of Notre Dame

(5 min question period after talks)

Track on Molecular Electronic Circuit Assembly

Track Chairs:

James R. Heath <heath@caltech.edu>, Department of Chemistry, California Institute of Technology, Los Angeles, CA

& Kwan Kwok<kkwok@darpa.mil>, Microsystems Technology Office (MTO), Defense Advanced Research Projects Agency (DARPA), Arlington, VI

Track on Molecular Electronic Circuit Assembly, Session A (3:30PM-4:05PM Tuesday, April 26): Ballroom II

3:30PM-4:00PM Track Keynote Talk: Build Complex Functions into a Single Nanocrystal

Speaker: Xiaogang Peng<xpeng@uark.edu>, Dept of Chemistry and Biochemistry, University of Arkansas, Fayetteville, AR 72701

Author: Xiaogang Peng, U. of Arkansas

(5 min question period after talk)

Refreshments (4:05PM-4:20PM Tuesday, April 26): Outside Ballroom II

Track on Molecular Electronic Circuit Assembly, Session B (4:20PM-6:00PM Tuesday, April 26): Ballroom II

4:20PM-4:40PM Submitted Paper: Functionalized Nanoelectrode Scanning Probes Using Carbon Nanotubes

Speaker: Pat Collier <collier@caltech.edu> California Institute of Technology, Chemistry 127/72, 1200 East California Blvd, Pasadena, CA 91125

Authors: Pat Collier, Jinyu Chen, Konstantinos Giapis, Caltech

(5 min question period after talks)

4:45PM-5:05PM Invited Talk: Designing novel molecular and nano-electronics systems using atomistic simulations

Speaker: Weiqiao Deng<weiqiao@wag.caltech.edu>, <weiqiao_deng@yahoo.com> Caltech 139-74, Pasadena, CA 91125

Authors:

Wei-Qiao Deng, California Institute of Technology

William A. Goddard III, California Institute of Technology

5:10PM-5:30PM Contributed Talk: Electrical and thermal properties of Si nanowire and carbon nanotube circuits

Speaker: Marc Bockrath<mwb@caltech.edu> Caltech, Mail Stop 128-95, Pasadena, CA 91125

Authors:

Marc Bockrath, California Institute of Technology

Hsin-Ying Chiu, California Institute of Technology

Vikram Deshpande, California Institute of Technology

Zhaohui Zhong, Harvard University

Deli Wang, Harvard University

Yi Cui, Harvard University

Charles Lieber, Harvard University

5:35PM-5:55PM Contributed Talk: Individually addressable conducting polymer nanowire electrode junctions in a sensor array

Speaker: Hsian-Rong Tseng<hrtseing@mednet.ucla.edu>, Crump Institute of Molecular Imaging, 700 Westwood Plaza, Los Angeles, CA 90095

Author: Hsian-Rong Tseng, University of California, Los Angeles

(5 min question period after talks)

Reception & Posters of Day: (6:00PM-7:00PM, Tuesday, April 26, 2005): Golden Cliff Room

Dinner: (7:00PM-8:00PM, Tuesday, April 26, 2005): Golden Cliff Room

Desserts & NSF workshop on Programmed Self-Assembly (8:00PM-9:30PM, Tuesday, April 26, 2005): Golden Cliff Room

FNANO Track on Self-Assembled DNA Nanostructures

Track Chair: Nadrian Seeman <ncs1@feynman.acf.nyu.edu>, Department of Chemistry, New York University, New York, NY

coChair: Chengde Mao <mao@purdue.edu>, Department of Chemistry, Purdue University, West Lafayette, IN

Track on Self-Assembled DNA Nanostructures, Session A (8:00AM-9:00AM Wednesday, April 27): Ballroom II

8:00AM-8:30AM Track Keynote Talk: Building Programmable Jigsaw Puzzles with RNA

Speaker: Luc Jaeger <jaeger@chem.ucsb.edu>, Chemistry and Biochemistry Dept. PSBN 4649A, University of California, Santa Barbara, CA, 93106-9510

Authors:

Luc Jaeger, University of California at Santa Barbara,

Arkadiusz Chworos, University of California at Santa Barbara

8:35AM-8:55AM Contributed Talk: Local and Global Mechanical Properties in DNA Crosslinked Gels

Speaker: Noshir Langrana <langrana@rutgers.edu>, Department of Mechanical and Aerospace Engineering Rutgers The State University of New Jersey, 98 Brett Road Piscataway, NJ 08554-8058

Authors:

Noshir Langrana, Rutgers University

David Lin, Rutgers University

Bernard Yurke, Bell Laboratories

(5 min question period after talks)

Continental Breakfast & Posters on Self-Assembled DNA Nanostructures (9:00AM-9:40AM Wednesday, April 27): Outside Ballroom II

Poster: Modular DNA Self-assembly and DNA Directed Assembly of Protein Array

Presenter: Hao Yan <hao.yan@asu.edu>, Department of Chemistry and Biochemistry Arizona State University Tempe, AZ 85287

Author: Hao Yan, Yan Liu, Kyle Lund, Rahul Chhabra, Sherri Harvey, Yonggang Ke, Arizona State University

Poster: Stepwise DNA Self-assembly of Fixed-size Nanostructures

Presenter: Thomas LaBean <thomas.labean@duke.edu>, 329 Gross Chemistry Bldg. Box 90345, Duke University, Durham, NC 27708

Authors:

Thom LaBean, Duke University

Sung Ha Park, Duke University

Sang Jung Ahn, Korea Research Institute of Standards and Science

John Reif, Duke University

Poster: DNA-Directed Self-Assembly of Gold Nanoparticles into One-Dimensional Arrays

Presenter: Chengde Mao <mao@purdue.edu>, Purdue University, Department of Chemistry, 560 Oval Drive West Lafayette, IN, 47907-2084

Authors:

Zhaoxiang Deng, Ye Itan, Seung-Hyun Lee, Alexander Ribbe, & Chengde Mao, Purdue

Poster: Self-Assembly of DNA on Gold

Presenter: Dmitri Petrovykh <dmitri.petrovykh@nrl.navy.mil>, Code 6177 Naval Research Laboratory 4555 Overlook Ave. SW, Washington, DC 20375-5342

Authors:

Dmitri Petrovykh, University of Maryland and Naval Research Lab

Aric Opdahl, National Institute of Standards and Technology

Hiromi Kimura-Suda, National Institute of Standards and Technology

Michael Tarlov, National Institute of Standards and Technology

Lloyd Whitman, Naval Research Lab

Poster: DNA self-assembly with floppy motifs --- single crossover lattices
Presenter: Paul W.K. Rothmund<pwkr@dna.caltech.edu>, California Institute of Technology Mail Code 136-93, Pasadena, CA 91125
Authors: Paul W.K. Rothmund, California Institute of Technology

Poster: The Design and Fabrication of a Fully Addressable 8-tile DNA Lattice
Presenter: Chris Dwyer<dwyer@ece.duke.edu>, Duke University, 130 Hudson Hall, Box 90291, Durham, NC 27708
Authors:
Chris Dwyer, Duke University, Dept. of Electrical & Computer Engineering
Sung Ha Park, Duke University, Dept. of Physics
Thomas LaBean, Duke University, Dept. of Computer Science
Alvin Lebeck, Duke University, Dept. of Computer Science

Poster: Programmable Step-by-step Assembly of DNA Nanostructures\
Presenter: Miho Tagawa<tagawa@genta.c.u-tokyo.ac.jp>, Department of Life Sciences, University of Tokyo 3-8-1 Komaba, Meguro-ku, Tokyo 153-8902, Japan
Authors: Miho Tagawa and Akira Suyama, Department of Life Sciences, University of Tokyo

Poster: Self Assembled DNA Tetrahedra: A Class of Rigid Nanostructures
Presenter: Russell Goodman<russell.goodman@physics.ox.ac.uk> Clarendon Laboratory, Department of Physics University of Oxford, Parks Road, Oxford, UK, OX13PU
Authors:
Russell Goodman, University of Oxford
Iwan Schaap, Vrije Universiteit
Catherine Tardin, Vrije Universiteit
Richard Berry, University of Oxford
Christoph Schmidt, Vrije Universiteit
Andrew Turberfield, University of Oxford

Poster: Self-assembled 1D DNA Nanostructures as Templates for Silver Nanowires
Presenter: Sung Park <spark@phy.duke.edu>, Duke University, Department of Physics, BOX 90305, Durham, NC, 27708
Authors:
Sung Park, Duke University
Hanying Li, Duke University
Hao Yan, Arizona State University
Gleb Finkelstein, Duke University
John Reif, Duke University
Thomas LaBean, Duke University

Poster: A Dendrimer-like DNA Based Nanobarcode System for Multiplexed Molecular Sensing

Presenter: Dan Luo<DL79@cornell.edu>, 220 Riley Robb, Cornell University, Ithaca, NY 14853-5701

Authors: Yougen Li, Yen Cu, & Dan Luo, Cornell University

Poster: Advancing Nucleic Acid Nanotube Architecture: Putting Slips and Stresses into the Design

Presenter: Nadrian Seeman <ned.seeman@nyu.edu>, Department of Chemistry, New York University, New York, NY 10003, USA

Authors: William B. Sherman and Nadrian C. Seeman

Poster: A dendrimer-like DNA based, self-assembled nanoscale hollow buckyball

Authors: Dan Luo <DL79@cornell.edu>, 220 Riley Robb Cornell University Ithaca, NY 14853-5701

Soong Um, Sang Kwon, Jong Lee, & Dan Luo, Cornell University

**Track on Self-Assembled DNA Nanostructures, Session B: (9:40AM-10:55AM
Wednesday, April 27): Ballroom II**

9:40AM-10:00AM Contributed Talk: Triggered Amplification by Hybridization Chain Reaction

Niles Pierce <niles@caltech.edu>, Caltech, Mail Code 114-96, Pasadena, CA 91125

Robert Dirks, Jennifer Padilla, & Niles Pierce, Caltech

10:05AM-10:25AM Contributed Talk: 2D DNA scaffolds for protein structure determination

Presenter: Jonathan Malo<jonathan.malo@physics.ox.ac.uk>, Clarendon Laboratory, Parks Road, Oxford, OX1 3PU

Authors:

Jonathan Malo, University of Oxford

James Mitchel, University of Oxford

Catherine Venien-Bryan, University of Oxford

J. Robin Harris, University of Mainz

Holger Wille, University of California, San Francisco

David Sherratt, University of Oxford

Andrew Turberfield, University of Oxford

10:30AM-10:50AM Contributed Talk: Hierarchical Self-assembly of Nanoparticle and Nanowire Arrays by 2D DNA Scaffolding

Presenter: Richard Kiehl<kiehl@ece.umn.edu>, University of Minnesota, 200 Union St. SE, EE/CS 4-174, Minneapolis, MN 55455

Authors:

Yariv Y. Pinto, University of Minnesota

John D. Le, University of Minnesota

Nadrian C. Seeman, New York University

Karin Musier-Forsyth, University of Minnesota

T. Andrew Taton, University of Minnesota

Richard A. Kiehl, University of Minnesota
(5 min question period after talks)

FNANO Track on DNA-linked Nanoparticle Structures

Track Chair: George C. Schatz <schatz@chem.northwestern.edu>, Department of Chemistry, Northwestern University, Evanston, IL

Track on DNA-linked Nanoparticle Structures, Session A (10:55AM-12:20PM Wednesday, April 27): Ballroom II

10:55AM-11:25PM Track Keynote Talk: DNA-polymer hybrids

Speaker: SonBinh Nguyen<stn@northwestern.edu> Department of chemistry
Northwestern University, 2145 Sheridan Rd., Evanston IL 60208-3113

Authors: Julianne Gibbs, Brian Stepp, So-Jung Park, Keith Watson, Chad Mirkin, George Schatz, & SonBinh Nguyen, Northwestern University

11:30PM-11:50PM Invited Talk: DNA-modified nanoparticles for ultra sensitive detection of proteins and nucleic acids

Speaker: Dimitra Georganopoulou<d-georganopoulou@northwestern.edu> Department of Chemistry, 2145 N Sheridan Road, Evanston, IL 60208

Authors:

Dimitra Georganopoulou, Northwestern University

Chad Mirkin, Northwestern University

Shad Thaxton, Northwestern University

11:55PM-11:15PM Invited Talk: Melting mechanisms of DNA-linked nanocomposite systems

Speaker: Sung Yong Park<parksy@chem.northwestern.edu>, Chemistry Department, Northwestern University, Evanston, IL 60208

Authors:

Sung Yong Park, Chemistry Department, Northwestern University

George C. Schatz, Chemistry Department, Northwestern University

(5 min question period after talks)

Lunch (12:20PM-1:20PM Wednesday, April 27): Aerie Restaurant (level 10 of Cliff Lodge)

Track on DNA-linked Nanoparticle Structures, Session B: (1:20PM-1:45PM Wednesday, April 27): Ballroom II

1:20PM-1:40PM Invited Talk: Dynamic Nano-Matryushkas: Biomolecule-Driven Mode Mixing And Energy Level Splitting

Speaker: Anne Lazarides <aal@duke.edu>, Duke University, Dept of Mechanical Engineering and Materials Science, 144 Hudson Hall, Box 90300, Durham, NC 27708-0300

Author: Anne Lazarides & David Sebba, Duke University

(5 min question period after talk)

Refreshment Break & Poster for DNA-linked Nanoparticle Structures (1:45PM-2:35PM Wednesday, April 27): Outside Ballroom II

Poster: Gold Nanoparticle Decoration of DNA on Silicon

Presenter: Eran Levy<eranlevy@engineering.ucsb.edu>, Eran Levy, 6763 Del Playa Dr. Apt. B, Goleta, CA, 93117

Authors:

Gary Braun, Department of Chemistry and Biochemistry, UC Santa Barbara

Katsuhiko nagaki, Department of Applied Physics, Hokkaido University, Sapporo 060-8628, Japan

August Estabrook, Department of Chemistry and Biochemistry, UC Santa Barbara

David Wood, Department of Physics, UC Santa Barbara

Eran Levy, Department of Chemical Engineering, UC Santa Barbara

Geoffrey Strouse, Department of Chemistry and Biochemistry, UC Santa Barbara

Remark:

Andrew Cleland, Department of Physics, UC Santa Barbara

Norbert O. Reich, Department of Chemistry and Biochemistry, UC Santa Barbara

Poster: Genetic Control of Stimuli-Responsive Assembly and Disassembly of Nanoparticles by Catalytic DNA

Presenter: Yi Lu<yi-lu@uiuc.edu>, Department of Chemistry, University of Illinois, 600 S. Mathews Ave., Urbana, IL 61801

Authors:

Yi Lu & Juewen Liu, University of Illinois at Urbana-Champaign

Track on DNA-linked Nanoparticle Structures, Session C: (2:35PM-3:25PM Wednesday, April 27): Ballroom II

2:35PM-2:55PM Contributed Talk: DNA Coated Nanoparticle eight-mers as Programmable Self-Assembly Building Blocks

Speaker: Björn Högberg<bjorn.hogberg@miun.se>, Mid Sweden University, Dept. of Physics, SE-851 70 Sundsvall, SWEDEN

Authors: Björn Högberg, Jing Liu-Helmerson, Svante Holm, & Håkan Olin, Mid Sweden University

3:00PM-3:20PM Contributed Talk: Design of Colorimetric Biosensors with DNAzymes and Nanoparticles

Speaker: : Juewen Liu<jliu2@uiuc.edu>, Department of Chemistry, University of Illinois, 600 S. Mathews Ave., Urbana, IL 61801

Authors:

Juewen Liu, University of Illinois at Urbana-Champaign

Yi Lu, University of Illinois at Urbana-Champaign

(5 min question period after talks)

FNANO Track on Molecular Motors

Track Chair: Andrew Turberfield <a.turberfield@physics.ox.ac.uk>, Department of Physics, Oxford University, Oxford, UK

Track on Molecular Motors, Session A (3:25PM-4:00PM Wednesday, April 27): Ballroom II

3:25PM-3:55PM Track Keynote Talk: Light-driven Molecular Motors

Speaker: Ben Feringa <b.l.feringa@rug.nl>, Department of Chemistry, Stratingh Institute, University of Groningen, Nijenborgh 4, 9747 AG Groningen, The Netherlands

Authors:

Ben Feringa, University of Groningen

(5 min question period after talk)

Refreshments & Posters on Molecular Motors (4:00PM-4:45PM Wednesday, April 27): Outside Ballroom II

Poster: "Molecular Dynamics of a Fast Artificial Electric-Field Driven Surface-Mounted Molecular Rotor: A Single-Molecule Parametric Oscillator"

Presenter: Jaroslav Vacek <vacek@eefus.colorado.edu>, University of Colorado at Boulder, Dept. of Chemistry & Biochemistry, 215 UCB, Boulder, CO 80309-0215

Authors:

Jaroslav Vacek, Dominik Horinek, & Josef Michl, University of Colorado at Boulder

Poster: Powering molecular motors made of DNA

Presenter: Simon Green <s.green@physics.ox.ac.uk>, Clarendon Laboratory, Parks Road, Oxford, OX1 3PU

Authors:

Simon Green, University of Oxford

Daniel Lubrich, University of Oxford

Jonathan Bath, University of Oxford

Andrew Turberfield, University of Oxford

Poster: Nanoscale Molecular Transport by Synthetic DNA Machines

Presenter: Niles Pierce <niles@caltech.edu>, Caltech, Mail Code 114-96, Pasadena, CA 91125

Authors:

Jong-Shik Shin, Caltech

Niles Pierce, Caltech

Poster: Self-assembly via active transport by biomolecular motors

Presenter: Henry Hess <hhess@u.washington.edu>, University of Washington, Bagley Hall Room 412, Box 351721, Seattle, Wa 98195

Authors:

Henry Hess, University of Washington

John Clemmens, Micronics Inc.

Christian Brunner, ETH Zurich
Robert Doot, University of Washington
arl-Heinz Ernst, EMPA Duebendorf
Viola Vogel, ETH Zurich
Sheila Luna, ETH Zurich

Poster: Powering molecular motors made of DNA

Presenter: Simon Green<s.green@physics.ox.ac.uk>, Clarendon Laboratory, Parks Road,
Oxford, OX1 3PU

Authors:

Simon Green, University of Oxford
Daniel Lubrich, University of Oxford
Jonathan Bath, University of Oxford
Andrew Turberfield, University of Oxford

Poster: Nanoscale Molecular Transport by Synthetic DNA Machines

Presenter: Niles Pierce<niles@caltech.edu>, Caltech, Mail Code 114-96, Pasadena, CA
91125

Authors:

Jong-Shik Shin, Caltech
Niles Pierce, Caltech

Poster: Self-assembly via active transport by biomolecular motors

Presenter: Henry Hess<hhess@u.washington.edu>, University of Washington, Bagley
Hall Room 412, Box 351721, Seattle, Wa 98195

Authors:

Henry Hess, University of Washington
John Clemmens, Micronics Inc.
Christian Brunner, ETH Zurich
Robert Doot, University of Washington
arl-Heinz Ernst, EMPA Duebendorf
Viola Vogel, ETH Zurich
Sheila Luna, ETH Zurich

Poster: Nanoscale Power Supply for Supramolecular and Molecular Machinery

presenter:Amar Flood, Department of Chemistry and Biochemistry and California
NanoSystems Institute, University of California, Los Angeles, California 90095

Authors

Sourav Saha, Erik L. Johansson, Amar H. Flood, Hsian-Rong Tseng, Jeffrey I. Zink, J.
Fraser Stoddart

**Track on Molecular Motors, Session B (4:45PM-6:00PM Wednesday, April 27):
Ballroom II**

4:45PM-5:05PM Invited Talk: Microtubule-based motor systems: From Cellular
Function to Bionanotechnology

Speaker: Stefan Diez <diez@mpi-cbg.de>, MPI-CBG, Pfotenhauerstr. 108, 01307
Dresden, Germany
Authors: Stefan Diez, MPI-CBG Dresden

5:10PM-5:30PM Contributed Talk: Design of a Fast Artificial Light-Absorption Driven
Molecular Rotor

Speaker: Jaroslav Vacek <jessica@eefus.colorado.edu>, University of Colorado at
Boulder, Dept. of Chemistry & Biochemistry, 215 UCB, Boulder, CO 80309-0215

Author:

Jaroslav Vacek, University of Colorado at Boulder

Lukas Kobl, University of Colorado at Boulder

John Miller, University of Colorado at Boulder

Josef Michl, University of Colorado at Boulder

5:35PM-5:55PM Contributed Talk: A DNzyme Crawls along a One-dimensional
Track

Speaker: Chengde Mao <mao@purdue.edu>, Purdue University, Department of
Chemistry, 560 Oval Drive, West Lafayette, IN 47907-2084

Authors: Ye Tian, Yu He, Yi Chen, & Chengde Mao, Purdue

(5 min question period after talks)

**Reception & Posters of Day (6:00PM-7:00PM, Wednesday, April 27): Golden Cliff
Room**

**Meeting for International Society For Nananoscale Science, Computation and
Engineering (ISNSCE) (7:00PM-7:30PM, Wednesday, April 27): Golden Cliff Room**

FNANO Track on Molecular Electronics Architectures: Ballroom II

Track Chairs: R. Stanley Williams <stan_williams@hp.com> & Philip J.

Kuekes <kuekes@hpl.hp.com>, Hewlett-Packard Corporation, Palo Alto, CA

**coChair: Alvin R. Lebeck <alvy@cs.duke.edu>, Department of Computer Science,
Duke University, Durham, NC**

**Track on Molecular Electronics Architectures, Session A (8:00AM-9:00AM
Thursday, April 28): Ballroom II**

8:00AM-8:30AM Track Keynote Talk: Implications of Self-Assembly: A Computer
Science Perspective,

Speaker: Seth Goldstein <seth@cs.cmu.edu>, School of Computer Science, CMU,
Pittsburgh, PA

8:35AM-8:55AM Invited Talk: A System-level Design Approach to the Evaluation of
Self-Assembled Computer Architectures

Speaker: Chris Dwyer <dwyer@ece.duke.edu>, Duke University.

(5 min question period after talks)

Continental Breakfast & Molecular Electronics Architectures Posters (9:00AM-9:15AM Thursday, April 28) Outside Ballroom II

Poster: Three-Dimensional Molecular Electronics Architectures and Nanoarchitectonics

Presenter: Sergey Lyshevski<Sergey.Lyshevski@rit.edu>, Sergey Lyshevski,
Department of Electrical Engineering, Rochester Institute of Technology, Rochester, NY
14623

Authors:

Sergey Lyshevski, Rochester Institute of Technology
Thomas Renz, Air Force Research Laboratory, Rome, NY

Poster: Molecular Electronic Device Integration

Presenter: Paul Franzon<paulf@ncsu.edu>, ECE Box 7914, North Carolina State
University, Raleigh, NC 27695

Authors:

David Nackashi, Christain Amsinck, Neil DiSpigna, Sachin Sonkusale, Paul Franzon,
North Carolina State University

Poster: Probabilistic Analysis of Self-Assembled Molecular Networks

Presenter: Sandeep Shukla<shukla@vt.edu>, Electrical and Computer Engineering Dept
Virginia Polytechnic and State University Blacksburg VA 24061
Debyan Bhaduri, Fermat Lab, ECE Department, Virginia Tech
Sandeep Shukla, Fermat Lab, ECE Department, Virginia Tech

Track on Molecular Electronics Architectures, Session B (9:15AM-10:30AM Thursday, April 28): Ballroom II

9:15AM-9:35AM Contributed Talk: Electron Magnetic Resonance of Iron Oxide
Nanoparticles Mineralized in Protein Cages

Speaker: Robert Usselman<usselman@chemistry.montana.edu>, Department of
Chemistry and Biochemistry, 108 Gaines Hall, Montana State University, Bozeman, Mt
59717

Authors: Robert Usselman, Michael Klem, Trevor Douglas, Mark Young, Yves Idzerda,
& David Singel, Montana State University

9:40AM-10:00AM Contributed Talk: Biomolecular routes to nanoelectronics

Speaker: Norbert Reich<reich@chem.ucsb.edu>, Department of Chemistry and
Biochemistry, Room 1142C, University of California, Santa Barbara, CA., 93106

Authors: Norbert Reich, Gary Braun, David Wood, August Estabrook, Stephanie
Wilkinson, & Michael Diechtierow, University of California

10:05AM-10:25AM Contributed Talk: Fundamental Energy Considerations for
Molecular Computing

Speaker: Craig Lent<Lent@nd.edu>, Electrical Engineering Dept., 275 Fitzpatrick Hall,
University of Notre Dame, Notre Dame, In 46556

Authors: Craig Lent, Univ. of Notre Dame

Remark: Could also be in (9) Molecular Electronics Devices
(5 min question period after talks)

FNANO Track on Fullerene Nanostructures: Ballroom II

Track Chair: Jie Liu <j.liu@duke.edu>, Department of Chemistry, Duke University, Durham, NC

Track on Fullerene Nanostructures, Session A (10:30AM-11:05AM Thursday, April 28): Ballroom II

10:30AM-11:00AM Track Keynote Talk: Carbon Nanotube Electronics and Optoelectronics

Speaker: Jia Chen<chenjia@us.ibm.com>, IBM T. J. Watson Research Center, 1101 Kitchawan Rd./ Rt 134, PO Box 218, Yorktown Heights, NY 10598

Authors: Jia Chen, Marcus Freitag, Christian Klinke, Ali Afzali, James Tsang, & Phaedon Avouris, IBM

(5 min question period after talk)

Refreshments (11:05AM-11:15AM Thursday, April 28) Outside Ballroom II

Track on Molecular Electronics Architectures, Session B (11:15AM-12:30PM Thursday, April 28): Ballroom II

11:15AM-11:35PM Invited Talk: Electrical properties of 0.4 cm long single walled carbon nanotubes

Speaker: Peter Burke<pburke@uci.edu>, MS 2625, U.C. Irvine, Irvine, CA 92697-2625

Authors: Peter Burke & Zhen Yu, U.C.Irvine

11:40PM-12:00PM Invited Talk: Carbon Nanotubes for Glucose Optical Sensing

Speaker: Wei Zhao<>wxzhao@ualr.edu>, Department of Chemistry, University of Arkansas, 2801 South University Ave., Little Rock, AR 72204

Authors: Wei Zhao, University of Arkansas-Little Rock

12:05PM-12:25PM Invited Talk: Giant field enhancement at carbon nanotube tips induced by multi-stage effect

Speaker: Jianyu Huang<huangje@bc.edu>, Department of Physics, Boston College, Chestnut Hill, MA 02467, USA

Authors: J.Y.Huang, S. Chen, S.H. Jo, K. Kempa, & Z.F. Ren, Boston College

(5 min question period after talks)