

**3rd Annual Conference on
FOUNDATIONS OF NANOSCIENCE:
SELF-ASSEMBLED ARCHITECTURES AND
DEVICES (FNANO06)**



FNANO06 Announcement: [[PDF](#)] [[TXT](#)] [[HTML](#)]

FNANO06 Webpage: <http://www.cs.duke.edu/~reif/FNANO/>

FNANO06 Schedule:
<http://www.cs.duke.edu/~reif/FNANO/FNANO06schedule.html>

FNANO06 Conference Registration page: <http://events.duke.edu/fnano06>

Hotel Accommodations: <http://www.cs.duke.edu/~reif/FNANO/venue.html>

FNANO Program Schedule:

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

Dates of FNANO Conference: Noon April 23 - Noon April 27, 2006.

FNANO06 Program Chair: [John H. Reif](#) <reif@cs.duke.edu>, Department of Computer Science, Duke University, Durham, NC

FNANO06 Program CoChairs:

- [Paul Weiss](#) <stm@psu.edu>, Department of Chemistry, Pennsylvania State University, University Park, PA
- [Erik Winfree](#) <winfree@caltech.edu>, Department of Computer Science and Computation and Neural Systems, California Institute of Technology, Pasadena, CA

Sunday April 23, 2006:

Conference Reception Desk: Location: Outside Ballroom I: (Noon - 7:30 PM Sunday April 23, 2006) Location: Outside Ballroom I

(Special) Track on Top-down Meets Bottom-up: Duration: 100 min (Noon – 1:40 PM Sunday April 23, 2006) Location: Ballroom I

- **Description:** *Talks & posters in this track will combine bottom-up self-assembly with top-down methods such as lithography or an external patterning force (e.g., electromagnetic field or chemical gradient).*
- **Track Chair:** [Marya Lieberman](mailto:mlieberm@nd.edu) <mlieberm@nd.edu>, Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN

Invited Talk ~ Noon – 12:20 PM (20 min.+ 5 min question period after talk): "In-Plane Electrochemical Potential Gradients for Active Spatiotemporal Templating of Living Polymerization"

Speaker: [Paul Bohn](mailto:bohn@scs.uiuc.edu) <bohn@scs.uiuc.edu>, Department of Chemistry, University of Illinois (UIUC)
44 Roger Adams Lab, 600 South Mathews Avenue, Urbana, IL 61801

Invited Talk ~ 12:25 – 12:45 PM (20 min.+ 5 min question period after talk): "Directed assembly of block copolymer containing materials on chemically nanopatterned substrates: a platform for two and three-dimensional nanofabrication"

Speaker: [Mark P. Stoykovich](mailto:stoykovi@cae.wisc.edu) <stoykovi@cae.wisc.edu>, Research Assistant, Department of Chemical and Biological Engineering, University of Wisconsin – Madison, 1415 Engineering Drive, Madison, WI

Invited Talk ~ 12:50 – 1:10 PM (20 min.+ 5 min question period after talk): "Electric-field directed assembly of micro- and nano-scale devices for heterogeneous integration of on-chip electronic systems"

[Theresa Mayer](mailto:tsm2@psu.edu) <tsm2@psu.edu>, 230 Electrical Engineering West, The Pennsylvania State University, University Park, PA 16802

Invited Talk ~ 1:15 – 1:35 PM (20 min.+ 5 min question period after talk): "Generation of two- and three-dimensional nanostructures by electron beam lithography on self-assembled monolayers"

Speaker: [Wolfgang Eck](mailto:weck@jax.org) <weck@jax.org>, The Jackson Laboratory, 600 Main Street, Bar Harbor, ME 04609

Authors: Wolfgang Eck, University of Heidelberg, Germany, and The Jackson Laboratory, Bar Harbor, ME; Michael Grunze, University of Heidelberg and The Jackson Laboratory; Armin Götzhäuser, University of Bielefeld, Germany; Alexander Küller, University of Heidelberg; Junbai Li, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100080, China; Yian Tai, University of Heidelberg

Refreshments & Posters on Top-down Meets Bottom-up: Duration: 60 min (1:40 PM - 2:40 PM Sunday April 23) Location: Outside Ballroom I

Poster Presentation: “Analysis and Experiments for Fracture-Controlled Fabrication of Nanocoils”

Presenter: [Dominik Bell](mailto:dbell@ethz.ch) <dbell@ethz.ch>, Tannenstrasse 3, CLA H19, 8092 Zurich, Switzerland

Authors: Dominik Bell, Institute of Robotics and Intelligent Systems, ETH Zurich; Lixin Dong, Institute of Robotics and Intelligent Systems, ETH Zurich; Matthias Golling, FIRST Center for Micro- and Nanoscience, ETH Zurich; Li Zhang, Laboratory for Micro- and Nanotechnology, Paul Scherrer Institute; Bradley Nelson, Institute of Robotics and Intelligent Systems, ETH Zurich; Detlev Gruetzmacher, Laboratory for Micro- and Nanotechnology, Paul Scherrer Institute

Poster Presentation: “Dielectrophoretic Assembly of Carbon-based Nanomaterials”

Presenter: [Arunkumar Subramanian](mailto:arun@ethz.ch) <arun@ethz.ch>, Altwiesenstrasse 124, 8051 Zurich Switzerland.

Authors: Arunkumar Subramanian, Institute of Robotics and Intelligent Systems, ETH Zurich, Switzerland; Lixin Dong, Institute of Robotics and Intelligent Systems, ETH Zurich, Switzerland; Bradley J. Nelson, Institute of Robotics and Intelligent Systems, ETH Zurich, Switzerland; Xinyong Tao, Dept. of Materials Science and Engineering, Zhejiang University, China; Xiaobin Zhang, Dept. of Materials Science and Engineering, Zhejiang University, China

Poster Presentation: “Patterning DNA Tiles into Arbitrary Two-Dimensional Shapes”

Presenter: [Brian Chow](mailto:bchow@media.mit.edu) <bchow@media.mit.edu>, 20 Ames Street, Room E15-435, Cambridge, MA 02139

Authors: Brian Chow, David Mosley, and Joseph Jacobson, MIT MediaLab

Poster Presentation: “Electrochemically Controllable Self-Assembly at the Nanoscale”

Presenter: [Paula Mendes](mailto:mendes@chem.ucla.edu) <mendes@chem.ucla.edu>, Department of Chemistry and Biochemistry University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, CA 90095

Authors: Paula Mendes, The California NanoSystems Institute, Department of Chemistry and Biochemistry, UCLA; Puru Parthasarathy, The California NanoSystems Institute, Department of Mechanical and Aerospace Engineering, UCLA; Jon Preece, School of Chemistry, The University of Birmingham; Yang Yang, Department of Materials Science and Engineering, UCLA; Yong Chen, The California NanoSystems Institute, Department of Mechanical and Aerospace Engineering, UCLA; Fraser Stoddart, The California NanoSystems Institute, Department of Chemistry and Biochemistry, UCLA

Posters on Self-Assembled System Complexity: Duration: 60 min (1:40 PM - 2:40 PM Sunday April 23) Location: Outside Ballroom I

Poster Presentation: “Tuning Reaction Networks for Programmed Self-Organization”

Presenter: [Eric Klavins](mailto:klavins@u.washington.edu) <klavins@u.washington.edu>, Electrical Engineering, University of Washington, Campus Box 352500, Seattle, WA 98195

Author: Eric Klavins, University of Washington

(Special) Track on Self-Assembled System Complexity, Session A:

Duration: 25 min (2:40 PM – 3:05 PM Sunday April 23) Location: Ballroom I

- **Description:** *A special session on system complexity issues in self-assembly, nano-manufacturing, and nano-based systems.*
- **Track Chair:** [Natasha Jonoska](mailto:jonoska@tarski.math.usf.edu) <jonoska@tarski.math.usf.edu>, Department of Mathematics, University of South Florida, FL

Contributed Talk ~ 2:40 PM– 3:00 PM (20 min.+ 5 min question period after talk):

“Toward a Theoretical Framework for Active Molecular Self-Assembly”

Contact: [Peng Yin](mailto:py@caltech.edu) <py@caltech.edu>, M/C 136-93 Moore Building, Caltech, Pasadena, CA 91125

Authors: Peng Yin, Nadine Dabby, Niles Pierce, and Erik Winfree, Caltech

Track on Self-assembly Across Scales, Session A: Duration: 35 min (3:05 PM – 3:40 PM Sunday April 23): Ballroom III

- **Track Chair:** [Karl Bohringer](mailto:karl@ee.washington.edu) <karl@ee.washington.edu>, Department of Electrical Engineering, University of Washington, Seattle, WA
- **CoChair:** [Babak Amir Parviz](mailto:babak@ee.washington.edu) <babak@ee.washington.edu>, Department of Electrical Engineering, University of Washington, Seattle, WA

Track Keynote Talk ~ 3:05 – 3:35 PM (30 min.+ 5 min question period after talk):

“Whither surface tension self-assembly?”

Speaker: [Richard Syms](mailto:r.syms@ic.ac.uk) <r.syms@ic.ac.uk>, EE Dept., Imperial College, Exhibition road, London SW72AZ, UK

Authors: Richard Syms, Imperial College London

Refreshments & Posters on Self-assembly Across Scales: Duration: 40 min (3:40 PM – 4:20 PM Sunday April 23): Ballroom III

Poster Presentation: “Template Based High Packing Density Assembly for Microchip Solid State Cooling Application”

Contact: [Kerwin Wang](mailto:kerwin.wang@intel.com), Components Research Division, Intel Corporation, Chandler, AZ 85226

Authors: Kerwin Wang and Rajashree Baskaran, Components Research Division, Intel Corporation; Karl F Böhringer, Department of Electrical Engineering, University of Washington, Seattle, WA

Poster Presentation: “Scalable Biomimetic Self-Assembling Actuators Powered By Surface Tension”

Authors: [Ruba T. Borno](mailto:rborbo@eecs.umich.edu) <rborbo@eecs.umich.edu>, Joseph D. Steinmeyer, and Michelk M. Maharbiz

Poster Presentation: “Self-assembly of microdevices onto silicon substrate via complementary shape matching”

Presenter: [Liling Yan](mailto:yanll@ime.a-star.edu.sg) <yanll@ime.a-star.edu.sg>, Institute of Microelectronics, 11 Science Park Road, Singapore Science Park II, Singapore, 117685

Authors: Liling Yan, Yak Long Lim, Vaidyanathan Krupesh, and Ebin Liao, Institute of Microelectronics; Karl Bohringer, University of Washington

Poster Presentation: “Meso-scale Self-assembly for Construction of Inorganic Crystalline Semiconductor Devices on Plastic”

Presenter: [Babak Parviz](mailto:babak@ee.washington.edu) <babak@ee.washington.edu>, Campus Box 352500, Seattle, WA 98195

Authors: Ehsan Saeedi, Sean Stauth, Babak Parviz, University of Washington

Track on Self-assembly Across Scales, Session B: Duration: 100 min (4:20 PM – 6:00 PM Sunday April 23): Ballroom III

Invited Talk ~ 4:20 – 4:40 PM (20 min.+ 5 min question period after talk): “Synthetic Approach of Sequential Self-Assembly”

Speaker: [Isao Shimoyama](mailto:isao@leopard.t.u-tokyo.ac.jp) <isao@leopard.t.u-tokyo.ac.jp>, The University of Tokyo, Tokyo, Japan

Authors: Isao Shimoyama and Hiroaki Onoe, Department of Mechano-Informatics, School of Information Science and Technology

The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

Invited Talk ~ 4:45 – 5:05 PM (20 min.+ 5 min question period after talk): “DNA based gels, liposomes and anisotropic dendrimers: DNA materials from macro to nano”

Speaker: [Dan Luo](mailto:DL79@cornell.edu) <DL79@cornell.edu>, 226 Riley Robb, Cornell University, Ithaca, NY 14853

Authors: Dan Luo, Soong Um, Jung Lee, Nokyoung Park and Sang Kwon Cornell University, Ithaca, NY

Invited Talk ~ 5:10 – 5:30 PM (20 min.+ 5 min question period after talk): “ Cross Scale Self Assembly Using Magnetic Nanostructures”

Speaker: Gaurav Sharma <sharmag@ime.a-star.edu.sg>, Institute of Microelectronics, Singapore

Authors: Gaurav Sharma, Qasem Ramadan, Seung Uk Yoon and Vaidyanathan Kripesh

Contributed Talk ~ 5:35 – 5:50 PM (20 min.+ 5 min question period after talk):

“Tailored adhesion for Self-Assembly, Transfer and Integration of particles on different length scales”

Contact: [Tobias Kraus](mailto:ytk@zurich.ibm.com) <ytk@zurich.ibm.com>, IBM Research GmbH, Zurich Research Laboratory, Säumerstrasse 8, 8803 Rüschlikon, Switzerland

Authors: Tobias Kraus and Manuela Kobas, IBM Research GmbH and ETH Zurich; Laurent Malaquin and Heiko Wolf, IBM Research GmbH; Nicholas D. Spencer, ETH Zurich, Switzerland

Reception & All Posters of Day: Duration: 90 min (6:00 PM - 7:30 PM, Sunday, April 23, 2005) Location: Golden Cliff Room

Monday, April 24, 2006:

**Continental Breakfast: Duration: 30 min (8:30 AM-9:00 AM Monday, April 24)
Location: Outside Ballroom III**

**FNANO Track on Molecular Electronic Devices & Circuit Assembly,
Session A: Duration: 100 min (9:00 AM-10:40 AM Monday, April 24) Location:
Ballroom III**

- **Track Chairs:** [James R. Heath](mailto:heath@caltech.edu) <heath@caltech.edu>, Department of Chemistry, California Institute of Technology, Los Angeles, CA
- **CoChair:** [Pat Collier](mailto:collier@caltech.edu) <collier@caltech.edu>, California Institute of Technology, Pasadena, CA

Invited Talk ~ 9:00 – 9:20 AM (20 min.+ 5 min question period after talk): "Probing Molecular Junctions with Plasmonics"

Speaker: [Nicholas A. Melosh](mailto:nmelosh@stanford.edu) <nmelosh@stanford.edu>, Materials Science & Engineering, Stanford University, Geballe Laboratory for Advanced Materials, McCullough Building, Room 223, 476 Lomita Mall, Stanford, CA 94305

Invited Talk ~ 9:25 – 9:45 AM (20 min.+ 5 min question period after talk): "Integrated Microfluidic Circuits for Sequential and Parallel Chemical Reactions"

Speaker: [Hsian-Rong Tseng](mailto:hrtseng@mednet.ucla.edu) <hrtseng@mednet.ucla.edu>, Department of Molecular and Medical Pharmacology, UCLA Crump Institute, Box 951770, Los Angeles, CA 90095-1770

Authors: Hsian-Rong Tseng, Guodong Sui, and Jinyi Wang, University of California, Los Angeles

Invited Talk ~ 9:50 – 10:10 AM (20 min.+ 5 min question period after talk): "Probing the performance and reliability of silicon-based molecular electronic devices with ultra-high vacuum scanning tunneling microscopy"

Speaker: [Mark Hersam](mailto:m-hersam@northwestern.edu) <m-hersam@northwestern.edu>, Materials Science and Engineering, Northwestern University, 2220 Campus Drive, Evanston, IL 60208-3108
Author: Mark Hersam, Northwestern University NOTE: Invited by Jim Heath

Invited Talk ~ 10:15 – 10:35 AM (20 min.+ 5 min question period after talk): "Control of Biochemical Reaction Dynamics in Restricted Environments"

Speaker: [C. Patrick Collier](mailto:collier@caltech.edu) <collier@caltech.edu>, California Institute of Technology, M/C 127-72, 1200 E. California Blvd., Pasadena, CA 91125
Author: Pat Collier, California Institute of Technology

**Refreshments: Duration 10 min (10:40 AM-10:50 AM Monday, April 24):
Outside Ballroom III**

**Track on Molecular Electronic Devices & Circuit Assembly, Session B:
Duration: 35 min (10:50 AM-11:25 AM Monday, April 24) Location: Outside**

Ballroom III

Track Keynote Talk ~ 10:50 – 11:20 AM (30 min.+ 5 min question period after talk):
"Rewiring the T cell signaling network using solid-state nanostructures".

Speaker: [Jay Groves](mailto:jtgroves@lbl.gov) <jtgroves@lbl.gov>, Department of Chemistry, University of California, Berkeley, 109 Lewis Hall, Berkeley, CA 94720

FNANO Track on Self-assembled Computer Circuit and System Architectures, Session A: Duration: 35 min (11:25 AM-12:00 PM Monday, April 24): Ballroom III

- **Track Chairs:** [Philip J. Kuekes](mailto:kuekes@hpl.hp.com) <kuekes@hpl.hp.com>, Hewlett-Packard Corporation, Palo Alto, CA
- **CoChair:** [Alvin R. Lebeck](mailto:alvy@cs.duke.edu) <alvy@cs.duke.edu>, Department of Computer Science, Duke University, Durham, NC

Track Keynote Talk ~ 11:25 AM – 11:55 PM (30 min.+ 5 min question period after talk): "Fabrication Challenges for Nanoscale Quantum Computing"

Speaker: [Fred Chong](mailto:chong@cs.ucsb.edu) <chong@cs.ucsb.edu>, Dept of CS, UCSB, Santa Barbara CA 93106-5110

Author: Frederic Chong, Department of Computer Science, UC Santa Barbara

Lunch: Duration: 60 min (12:00 PM - 1:00 PM Monday, April 24) Location: Aerie Restaurant (level 10 of Cliff Lodge)

FNANO Track on Self-assembled Computer Circuit and System Architectures, Session B: Duration: 75 min (1:00 PM – 2:15 PM Monday, April 24): Ballroom III

Invited Talk ~ 1:00 – 1:20 PM (20 min.+ 5 min question period after talk): "Using DNA as a Circuitboard for a Molecular QCA PLA"

Speaker: [Michael Niemier](mailto:mniemier@cc.gatech.edu) <mniemier@cc.gatech.edu>, Department of Computer Science & Eng., 384 Fitzpatrick Hall, Notre Dame, IN 46556, USA

Authors: Michael Crocker, Timothy Dysart, Sharon Hu, and Marya Lieberman, University of Notre Dame; Michael Niemier, Georgia Institute of Technology

Invited Talk ~ 1:25 – 1:45 PM (20 min.+ 5 min question period after talk): "Nanoscale Circuits and Architectures for Probabilistic Computation in the Presence of Noise"

Speaker: [Iris Bahar](mailto:iris_bahar@brown.edu) <iris_bahar@brown.edu>, Division of Engineering, Brown University, 182 Hope Street, Providence, RI 02912

Author: Iris Bahar, BrownUniversity

Contributed Talk ~ 2:50 – 2:10 PM (20 min.+ 5 min question period after talk):
"Excitable Vesicles-A new Platform for Investigating Biological Complexity"

Contact: [Carlo Montemagno](mailto:cmontema@mac.com) <cmontema@mac.com>, Dept. of Bioengineering, UCLA, 7523 Boelter Hall, Los Angeles, CA 90095-1600

Authors: David Wendell and Carlo Montemagno, UCLA-Bioengineering

FNANO Track on Molecular Motors, Session A: Duration: 35 min (2:15 PM – 2:50 PM Monday, April 24) Location: Ballroom III

- **Track Chair:** [Andrew Turberfield](mailto:a.turberfield@physics.ox.ac.uk) <a.turberfield@physics.ox.ac.uk>, Department of Physics, Oxford University, Oxford, UK

Track Keynote Talk ~ 2:15 – 2:45 PM (30 min.+ 5 min question period after talk):

“Breaking the Nanometer barrier: Progress in Biological Nanoscience, Measured One Molecule at a Time”

Speaker: [Steven Block](mailto:sblock@stanford.edu) <sblock@stanford.edu>, Department of Biological Sciences, Department of Applied Physics, Stanford University

Author: Steven M. Block, Stanford University

Refreshments & Posters on Molecular Motors: Duration 30 min (2:50 PM - 3:20 PM Monday, April 24) Location: Outside Ballroom III

Poster Presentation: “Design of Fluid-Driven and Light-Pulse Driven Surface-Mounted Molecular”

Presenter: Josef Michl <michl@eefus.colorado.edu>, Department of Chemistry and Biochemistry, University of Colorado, 215 UCB, Boulder, CO 80309-0125

Authors: [Jessica Miller](mailto:jessica@eefus.colorado.edu) <jessica@eefus.colorado.edu>, Jaroslav Vacek, Alexandr Prokop, Lukas Kobr, and Josef Michl, University of Colorado; John Miller, Brookhaven Laboratory

Poster Presentation: “Artificial Muscles Based On Doubly Threaded Rotaxanes”

Presenter: [Jishan Wu](mailto:wuj@chem.ucla.edu) <wuj@chem.ucla.edu>, The California Nanosystems Institute and the Department of Chemistry and Biochemistry, University of California at Los Angeles, 607 Charles E. Young Dr. East, Los Angeles, CA 90095-1569

Authors: Jishan Wu, Ken Leung, Ja-Young Han, Stuart Cantrill, Diego Brenitez, and Fraser Stoddart, University of California at Los Angeles

Poster Presentation: “DNA hairpins: fuel for autonomous DNA devices”

Presenter: [Simon Green](mailto:simon.green@physics.ox.ac.uk) <simon.green@physics.ox.ac.uk>, Clarendon Laboratory, Parks Road, Oxford, OX1 3PU, UK

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

Poster Presentation: “Towards a Light-Driven Molecular Shuttle”

Presenter: [Sourav Saha](mailto:ssaha@chem.ucla.edu) <ssaha@chem.ucla.edu>, University of California Los Angeles, Department of Chemistry and Biochemistry, 607 Charles E Young Drive, East, 5210 Molecular Science Building, Los Angeles, CA 90095-1569

Authors: Sourav Saha, Amar Flood, Fraser Stoddart, UCLA

Poster Presentation: “Cation-Cation Interactions in Interlocked Molecules: The Actuation Energetics of a Synthetic Linear Motor-Molecule and New [2] Rotaxane Architectures”

Presenter: [Brian Northrop](mailto:northrop@chem.ucla.edu) <northrop@chem.ucla.edu>, University of California, Los Angeles, Department of Chemistry and Biochemistry, 607 Charles E. Young Drive East, Box 951569, Los Angeles, CA, 90095-1569

Authors: Brian Northrop, Kendall Houk, Fraser Stoddart UCLA Department of Chemistry and Biochemistry; Branden Brough UCLA Mechanical and Aerospace Engineering Department; Jacob Schmidt UCLA Department of Bioengineering; Ksian-Rong Tseng UCLA Department of Molecular and Medical Pharmacology

FNANO Track on Molecular Motors, Session B: Duration 100 min (3:20 PM - 5:00 PM Monday, April 24) Location: Ballroom III

Invited Talk ~ 3:20 – 3:40 PM (20 min.+ 5 min question period after talk): “Harnessing Microorganisms to Transport Microscale Loads”

Speaker: [Doug Weibel](mailto:dweibel@gmwhgroup.harvard.edu) <dweibel@gmwhgroup.harvard.edu>, Mallinckrodt 235, Department of Chemistry and Chemical Biology, 12 Oxford Street, Harvard University, Cambridge MA 02138

Invited Talk ~ 3:45 – 4:05 PM (20 min.+ 5 min question period after talk): “Molecular Motion and Mechanics on Surfaces: Driving Nanocars”

Speaker: [Kevin Kelly](mailto:kkelly@rice.edu) <kkelly@rice.edu>, Rice University - MS 355, ECE Department, PO Box 1892, Houston, TX 77251-1892
Author: Kevin Kelly, Rice University

Invited Talk ~ 4:10 – 4:30 PM (20 min.+ 5 min question period after talk): “Multivalent Catalytic Nanoassemblies on the Move”

Speaker: [Steven Taylor](mailto:st2171@columbia.edu) <st2171@columbia.edu>, Columbia University, Department of Medicine, 630 W. 168TH ST, Box 84, New York, NY, 10032
Author: Steven Taylor, Columbia University

Invited Talk ~ 4:35 – 4:55 PM (20 min.+ 5 min question period after talk): “Rotary molecular motors in solution and on surfaces, and their application to performing macroscopic work”

Speaker: [Michael Pollard](mailto:m.m.pollard@rug.nl) <m.m.pollard@rug.nl>, Department of Organic and Molecular Inorganic Chemistry, The University of Groningen, Nijenborgh 4, Groningen, 9747 AG, The Netherlands

Authors: Michael M. Pollard, Rienk Eelkema, Nathalie Katsonis, Monika Lubomska, Petra Rudolf, Greg Carroll, Richard van Delden, Matthijs ter Wiel, Stephen P. Fletcher, Frederic Dumur, and Ben L. Feringa Stratingh Institute, University of Groningen

**FNANO Track on Self-Assembled DNA Nanostructures, Session A:
Duration: 60 min (5:00 PM – 6:00 PM Monday, April 24) Location: Ballroom III**

- **Track Chair:** [Nadrian Seeman](mailto:ncs1@feynman.acf.nyu.edu) <ncs1@feynman.acf.nyu.edu>, Department of Chemistry, New York University, New York, NY

- **CoChair:** [Chengde Mao](mailto:mao@purdue.edu) <mao@purdue.edu>, Department of Chemistry, Purdue University, West Lafayette, IN

Track Keynote Talk ~ 5:00 – 5:30 PM (30 min.+ 5 min question period after talk):
“DNA Origami”

Speaker: [Paul Rothemund](mailto:pwkr@dna.caltech.edu) <pwkr@dna.caltech.edu>, Department of Computer Science, and Department of Computation and Neural Systems, California Institute of Technology, Mail Code 136-93 Pasadena, CA, 91125

Contributed Talk ~ 5:35 – 5:55 PM (20 min.+ 5 min question period after talk): “DNA Tetrahedra”

Contact: [Russell Goodman](mailto:russell.goodman@physics.ox.ac.uk) <russell.goodman@physics.ox.ac.uk>, Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford, United Kingdom
Authors: Iwan Schaap, Catherine Tardin, and Christoph Schmidt, Vrije Universiteit; Christoph Erben, Richard Berry, Andrew Turberfield, University of Oxford

(Special) Track on Self-Assembled System Complexity, Session B:
Duration: 35 min (6:00 PM – 6:35 PM Monday, April 24)

Track Keynote Talk ~ 6:00 – 6:30 PM (30 min.+ 5 min question period after talk):
“Protocells: Minimal self-replicating nanomachines”

Speaker: [Steen Rasmussen](mailto:steen@lanl.gov) <steen@lanl.gov>, <steen@santafe.edu>, Self-Organizing Systems (SOS), EES-6, MS-D462, Los Alamos National Laboratory, Los Alamos NM 87545, U.S.A.

Authors: Steen Rasmussen Los Alamos National Laboratory & Santa Fe Institute, Santa Fe, NM; J. Bailey, Los Alamos National Laboratory, Los Alamos NM; J. Boncella, Los Alamos National Laboratory, Los Alamos NM; L. Chen, Rush University, Chicago, IL, U.S.A.; Argonne National Laboratory, IL; G. Collis, Los Alamos National Laboratory, Los Alamos NM; S. Colgate, Los Alamos National Laboratory, Los Alamos NM; M. DeClue, Los Alamos National Laboratory, Los Alamos NM; H. Fellerman, Los Alamos National Laboratory, Los Alamos NM; Barcelona University, Spain; G. Goranovic, University of Southern Denmark; Y. Jiang, Los Alamos National Laboratory, Los Alamos NM; C. Knutson, Los Alamos National Laboratory, Los Alamos NM; P.-A. Monnard, Los Alamos National Laboratory, Los Alamos NM; F. Mouffouk, Rush University, Chicago, IL, U.S.A.; Argonne National Laboratory, IL; P. Nielsen, University of Copenhagen, Denmark; A. Sen, University of Copenhagen, Denmark; A. Shreve, Los Alamos National Laboratory, Los Alamos NM; A. Tamulis, Vilnius University, Lithuania; B. Travis, Los Alamos National Laboratory, Los Alamos NM; P. Weronki, Los Alamos National Laboratory, Los Alamos NM; W. Woodruff1, Santa Fe Institute, Santa Fe, NM; J. Zhang, Los Alamos National Laboratory, Los Alamos NM; X. Zhou, Los Alamos National Laboratory, Los Alamos NM; and H. Ziock, Los Alamos National Laboratory, Los Alamos NM

Evening Reception & All Posters of the Day: Duration 90 min (6:30 PM – 8:00 PM Monday, April 24): Golden Cliff Room

Tuesday, April 25, 2006:

Continental Breakfast & Posters on Self-Assembled DNA

Nanostructures: Duration: 75 min (9:00 AM – 10:15 AM Tuesday, April 25)

Location: Outside Ballroom III

Poster Presentation: “Programmable Step-by-step Assembly of DNA Nano-triangles”

Presenter: [Miho Tagawa-Nagano](mailto:tagawa@genta.c.u-tokyo.ac.jp) <tagawa@genta.c.u-tokyo.ac.jp>, Department of Life Sciences and Institute of Physics, University of Tokyo 3-8-1 Komaba, Meguro-ku, Tokyo 153-8902, Japan

Authors: Miho Tagawa-Nagano, Koh-ichiroh Shohda, and Akira Suyama, Department of Life Sciences and Institute of Physics, University of Tokyo

Poster Presentation: “Hybridization in a Microfluidic Device for DNA Tile Self-Assembly”

Presenter: [Kotaro Somei](mailto:somei@mrt.dis.titech.ac.jp) <somei@mrt.dis.titech.ac.jp>, G3-1021, 4259 Nagatsuda, Midori, Yokohama, 226-8502 Japan P.Box G3-53

Authors: Kotaro Somei and Satoshi Murata, Tokyo Institute of Technology; Shohei Kaneda and Teruo Fujii, The University of Tokyo

Poster Presentation: “DNA-Based Molecular Containers”

Presenter: [William Shih](mailto:William_Shih@dfci.harvard.edu) <William_Shih@dfci.harvard.edu>, Jimmy Fund Way, Smith 1058C, Dana-Farber Cancer Institute, Boston, MA 02115

Authors: William Shih, Shawn Douglas, and Payal Pallavi, Dana-Farber Cancer Institute

Poster Presentation: “Multi-step Algorithmic Self-Assembly from a Rigid Boundary”

Presenter: [Sung Ha Park](mailto:spark@dna.caltech.edu) <spark@dna.caltech.edu>, Caltech, Mail Code 136-93, 1200 E. California Blvd., Pasadena, CA 91125

Authors: SungHa Park, Paul Rothemund, and Erik Winfree, Caltech

Poster Presentation: “DNA-Templated Nanocomposites for Nanoelectronic Applications”

Presenter: [Hector Alejandro Becerril](mailto:hab@chem.byu.edu) <hab@chem.byu.edu>, C-100 Benson Provo, UT 84602

Authors: Hector Alejandro Becerril and Adam Woolley, Brigham Young University

Poster Presentation: “ Toward a programmable nanoscale protein array on a DNA scaffold”

Presenter: [Berea Williams](mailto:berea.williams@asu.edu) <berea.williams@asu.edu>, 1001 S. McAllister, Tempe, AZ, 85287

Authors: Berea Williams, Kyle Lund, Yan Lui, John Chaput, and Hao Yan, Arizona State University

Poster Presentation: “A Study of DNA Tube Formation Mechanisms using 4, 8, 12-helix DNA Tile Structures”

Presenter: [Yonggang Ke](mailto:Younggang.Ke@asu.edu) <Younggang.Ke@asu.edu>, Biodesign Institute, Arizona State University, 1001 S McAllister Ave, Tempe AZ, 85287

Authors: Yonggang Ke, Yan Liu, Hao Yan, and Jiuping Zhang, Arizona State University

Poster Presentation: “Self-assembled Signaling Aptamer DNA Arrays for Protein Detection”

Presenter: [Chenxiang Lin](mailto:chenxiang.lin@asu.edu) <chenxiang.lin@asu.edu>, Biodesign Institute Building A Arizona State University, 1001 S McAllister Ave, Tempe AZ, 85287

Authors: Chenxiang Lin, Evaldas Katilius, Yan Liu, and Hao Yan, Biodesign Institute and Arizona State University

Poster Presentation: “DNA guided self-assembly of Au nanoparticle”

Presenter: [Junping Zhang](mailto:junping.zhang@asu.edu) <junping.zhang@asu.edu>, 1001S, McAllister Avenue, Biodesign Institute, Arizona State University Tempe, AZ 85287-5601

Authors: Junping Zhang, Yan Liu, Yonggang Ke, and Hao Yan, Biodesign Institute, Arizona State University

Poster Presentation: “General Holliday Triangle Design”

Presenter: [William Sherman](mailto:wsherman@bnl.gov) <wsherman@bnl.gov>, Building 463, Brookhaven National Laboratory, Po Box 5000, Upton, New York 11973-5000

Authors: William Sherman, Brookhaven National Laboratory; Jens Kopatsch and Nadrian Seeman, New York University; Pamela Constantinou, Rice University

Poster Presentation: “Using DNA Origami to Nucleate Programmable Width Molecular Ribbons”

Presenter: [Robert Barish](mailto:barish@dna.caltech.edu) <barish@dna.caltech.edu>, The California Institute of Technology, MSC 127, Pasadena, CA, 91126

Authors: Robert Barish, Rebecca Schulman, Paul Rothmund, and Erik Winfree, The California Institute of Technology

Poster Presentation: “Self-Assembly of Symmetric Finite-Size DNA Nanoarrays”

Presenter: [Yonggang Ke](mailto:younggang.Ke@asu.edu) <younggang.Ke@asu.edu>, Biodesign Institute, Arizona State University, 1001 S McAllister Ave, Tempe AZ, 85287

Authors: Yonggang Ke, Yan Liu, and Hao Yan, Arizona State University

Poster Presentation: “The Development of a Nanoscale Protein Array on a DNA scaffold”

Presenter: [Berea Williams](mailto:berea.williams@asu.edu) <berea.williams@asu.edu>, 1001 S. McAllister, BDA 119, Tempe, AZ, 85283

Authors: Berea Williams, Hao Yan, and John Chaput, Arizona State University

Poster Presentation: “Self-Assembling a Molecular Pegboard”

Presenter: [Hao Yan](mailto:hao.yan@asu.edu) <hao.yan@asu.edu>, Biodesign Institute, 1001 S. McAllister Ave., Tempe, AZ 85287

Authors: Kyle Lund, Yan Liu, Stuart Lindsay, and Hao Yan, Arizona State University

Poster Presentation: “Self-assembled Signaling Aptamer DNA Arrays for Protein Detection”

Presenter: [Hao Yan](mailto:hao.yan@asu.edu) <hao.yan@asu.edu>, Arizona State University, Biodesign Institute Building A, 1001 S McAllister Ave, Tempe AZ 85287

Authors: Chenxiang Lin, Evaldas Katilius, Yan Liu, and Hao Yan, Arizona State University & Biodesign Institute

Poster Presentation: “Design and Simulation of Self-Repairing DNA Lattices”

Presenter: [Urmi Majumder](mailto:urmim@cs.duke.edu) <urmim@cs.duke.edu> Computer Science Dept, Duke University, Box 90129, Durham, NC 27708

Authors: Urmi Majumder, Sudheer Sahu, Thom LaBean, and John Reif, Duke University
(5 min question period after talks)

Track on Self-Assembled DNA Nanostructures, Session B: Duration: 75 min (10:15 AM - 11:55 AM Tuesday, April 25) Location: Ballroom III

Contributed Talk ~ 10:15 – 10:35AM (20 min.+ 5 min question period after talk):
“Sequence Symmetry as a Tool for Designing DNA Nanostructures”

Contact: [Chengde Mao](mailto:mao@purdue.edu) <mao@purdue.edu>, Purdue University, Department of Chemistry, 560 Oval Drive, West Lafayette, IN 47907

Authors: Yu He, Haipeng Liu, Yi Chen, Ye Tian, Alexander Ribbe, and Chegnde Mao, Purdue University

Contributed Talk ~ 10:40 – 11:00 AM (20 min.+ 5 min question period after talk):
“Experimental Progress on DNA-based Self-assembly of Nanostructures”

Contact: [Hao Yan](mailto:hao.yan@asu.edu) <hao.yan@asu.edu>, Biodesign Institute, 1001 S. McAllister Ave., Arizona State University, Tempe, AZ 85287

Authors: Hao Yan, Yan Liu, Kyle Lund, Sherri Rinker, Rahul Chhabra, and Junping Zhang, Arizona State University

Contributed Talk ~ 11:05 – 11:25 AM (20 min.+ 5 min question period after talk):
“Amorphous hairpin DNA memory for assembling nanoparticles/ biomacromolecules”

Contact: [Akira Suyama](mailto:suyama@dna.c.u-tokyo.ac.jp) <suyama@dna.c.u-tokyo.ac.jp>, Department of Life Sciences, University of Tokyo, 3-8-1 Komaba, Meguro-ku, Tokyo 153-8902, Japan

Authors: Masahiro Takinoue, Takahiko Endo, and Akira Suyama, University of Tokyo

Contributed Talk ~ 11:30 – 11:50 AM (20 min.+ 5 min question period after talk):
“DNA-Based Self-Assembly Methods for Nanoscale”

Contact: [Richard Kiehl](mailto:kiehl@ece.umn.edu) <kiehl@ece.umn.edu>, Richard A. Kiehl
200 Union St. SE, EE/CS 4-174, Minneapolis, MN 55455

Authors: John Le, Yariv Pinto, Karin Musier-Forsyth, and Richard Kiehl, U. of Minnesota; Nadrian Seeman, New York University

Track on Viral Self-Assembly, Session A: Duration: 35 min (11:55 AM – 12:30 PM Tuesday, April 25) Location: Ballroom III

- **Track Chair:** [M.G Finn](mailto:mgfinn@scripps.edu) <mgfinn@scripps.edu>, Department of Chemistry and The Skaggs Institute for Chemical Biology, Scripps Research Institute, La Jolla, CA
- **Track CoChair:** [Morley Stone](mailto:mstone@darpa.mil) <mstone@darpa.mil>, DARPA/DSO, Arlington, VA

Track Keynote Talk ~ 11:55 AM – 12: 25 PM (30 min.+ 5 min question period after talk): “Exploiting viral protein interfaces for biomimetic materials synthesis”

Speaker: [Trevor Douglas](mailto:tdouglas@chemistry.montana.edu) <tdouglas@chemistry.montana.edu>, Montana State University

Authors: Trevor Douglas and Mark Young, Montana State University

Lunch: Duration: 60 min (12:30 PM – 1:30 PM Tuesday, April 25): Aerie Restaurant (level 10 of Cliff Lodge)

Track on Viral Self-Assembly, Session B: Duration: 75 min (1:30 PM – 2:45 PM Tuesday, April 25) Location: Ballroom III

Invited Talk ~ 1:30 – 1:50 PM (20 min.+ 5 min question period after talk): “Making and Breaking Symmetry, The Bacteriophage Example”

Speaker: [Peter Prevelige](mailto:prevelig@uab.edu) <prevelig@uab.edu>, Dept.of Microbiology. University of Alabama at Birmingham

Invited Talk ~ 1:55 – 2:15 PM (20 min.+ 5 min question period after talk): “Diverting assembly of a spherical virus towards construction of designed structures”

Speaker: [Adam Zlotnick](mailto:adam-zlotnick@ouhsc.edu) <adam-zlotnick@ouhsc.edu>, OUHSC, Biochemistry & Molecular Biology, PO Box 26901, BRC464, Oklahoma City, OK 73190

Authors: Adam Zlotnick, Santanu Mukherjee, and Jennifer Johnson, OUHSC

Invited Talk ~ 2:20 – 2:40 PM (20 min.+ 5 min question period after talk):

“Hierarchical Self-assembly of Tobacco Mosaic Virus for Materials Development”

Speaker: [Qian Wang](mailto:wang@mail.chem.sc.edu) <wang@mail.chem.sc.edu>, University of South Carolina, 631 Sumter Street, Columbia, SC 29205, USA

Authors: Zhongwei Niu, Michael Bruckman, Siqi Li, and Qian Wang, Department of Chemistry and Biochemistry, University of South Carolina; Jinbo He and Thomas Russell, University of Massachusetts, Amherst

Refreshments and Posters on Viral Self-Assembly: Duration: 20 min (2:45 PM - 3:05 PM Tuesday, April 25) Location: Outside Ballroom III

Poster Presentation: “Self-Assembly of Molecular Circuits on a Nanoscale Virus Scaffold”

Presenter: [Banahalli Ratna](mailto:ratna@nrl.navy.mil) <ratna@nrl.navy.mil>, Head, Laboratory for Interfacial Interactions, Center for Bio/Molecular Science and Engineering, Code 6930, Naval Research Laboratory, 4555 Overlook Avenue SW, Washington DC 20375-5320
Authors: Amy Szuchmacher Blum, Carissa M. Soto, and Banahalli R. Ratna, Naval Research Laboratory; Anju Chatterji and John E. Johnson, Scripps Research Institute

Posters on Self-assembly of Peptide-Protein Nanostructures: Duration: 20 min (2:45 PM - 3:05 PM Tuesday, April 25) Location: Outside Ballroom III

Poster Presentation: “Ligand-dependent changes in the SPR of magnetic nanoparticles”
Presenter: [Paul Hanson](mailto:phanson@uno.edu) <phanson@uno.edu>, Department of Chemistry, University of New Orleans, 2000 Lakeshore Drive, New Orleans, LA. 70148
Authors: Larisa Radu, Daniella Caruntu, and Paul Hanson, University of New Orleans, Department of Chemistry; John Wiley and Charles O'Connor, University of New Orleans, Advanced Materials Research Institute

Track Self-assembly of Peptide-Protein Nanostructures: Duration: 50 min (3:05 PM - 3:55 PM Tuesday, April 25) Location: Outside Ballroom III

- **Track Chair:** [Mehmet Sarikaya](mailto:sarikaya@u.washington.edu) <sarikaya@u.washington.edu>, GEMSEC and Materials Science and Engineering(MSE), Box 352120, University of Washington, Seattle, WA 98195

Invited Talk ~ 3:05 – 3:25 PM (20 min.+ 5 min question period after talk): “Expanding Nature’s Set of Protein Folds by *In Vitro* Selection.”
Speaker: John Chaput <John.Chaput@asu.edu>, Biodesign Institute, 1001 S MacAllister Blvd., Box: 875001, Arizona State University(ASU), Tempe, AZ 85287-5001

Invited Talk ~ 3:30 – 3:50 PM (20 min.+ 5 min question period after talk):
"GEPI – Genetically Engineered Polypeptides for Inorganics: Peptide-Based Molecular Tool Set"

Presenter: [Mehmet Sarikaya](mailto:sarikaya@u.washington.edu) <sarikaya@u.washington.edu>, GEMSEC and Materials Science, Univ.

Washington, Seattle, WA

Authors: Candan Tamerler¹ Daniel Schwartz,^{2,1} Ram Samudrala,³ David Ginger,⁴ Babak Parviz,⁵ Beth Traxler,³ Younan Xia,⁴ Alex Jen,^{1,4} Francois Baneyx,² John Evans,⁶ and [Mehmet Sarikaya](mailto:sarikaya@u.washington.edu)^{1,2}

(¹Materials Sci. & Eng., ²Chemical Eng., ³Microbiology, ⁴Chemistry, ⁵Electrical Eng., University of Washington, Seattle, WA, USA, and ⁶Chemistry, New York University, New York, NY, USA)

Invited Talk ~ 3:55 – 4:15 PM (20 min.+ 5 min question period after talk): “Self-Assembled Peptide-Based Functional Molecular Constructs”

Presenter: Candan Tamerler¹, Departments of Molecular Biology and Genetics, Istanbul Technical University, Maslak, Istanbul, Turkey

C. Tamerler,^{1,2} B. Parviz,³ A. Jen,^{1,4} and M. Sarikaya^{1,5} (¹Departments of Molecular Biology and Genetics, Istanbul Technical University, Maslak, Istanbul, Turkey;

²Materials Science and Engineering, Electrical Engineering,³ Chemistry, ⁴Electrical Engineering, and ⁵Chemical Engineering, University of Washington, Seattle, WA 98195, USA)

Refreshments & Posters on Self-Assembled Surface Chemistry:

Duration: 15 min (4:20 PM - 4:35 PM Tuesday, April 25): Outside Ballroom III

Poster Presentation: “Nanoscale Patterning via Self- and Directed Assembly”

Presenter: [Paul Weiss](mailto:stm@psu.edu) <stm@psu.edu>, 407 Davey Laboratory, Department of Chemistry, Pennsylvania State University, University Park, PA 85287

Poster Presentation: “Single molecule placement of small molecule probes in SAMs allow selective recognition by large biomolecule binding partners”

Presenter: [Anne Andrews](#), Department of Chemistry, Pennsylvania State University, University Park, PA 85287

Track on Self-Assembled Surface Chemistry: Duration: 85 min (4:35 PM – 6:00 PM Tuesday, April 25): Outside Ballroom III

- **Track Chair:** [Lloyd Smith](mailto:smith@chem.wisc.edu) <smith@chem.wisc.edu>, Department of Chemistry, University of Wisconsin, Madison, WI
- **CoChair:** [Paul Weiss](mailto:stm@psu.edu) <stm@psu.edu>, Pennsylvania State University, University Park, PA

Track Keynote Talk ~ 4:35 – 5:05 PM (30 min.+ 5 min question period after talk): “Self-assembled Nanostructures in Nature and Routes to Biomimicry”.

Speaker: [Suzanne P Jarvis](mailto:suzi.jarvis@tcd.ie) <suzi.jarvis@tcd.ie>, Nanoscale Function Group, Nanoscience Laboratory, Trinity College, Dublin, Ireland.

Contributed Talk ~ 5:10 – 5:30 PM (20 min.+ 5 min question period after talk): “The Chemical and Physical Properties of DNA Functionalized Gold Nanoparticles and Their Role in Screening DNA Binding Molecules”

Speaker: [Abigail Lytton-Jean](mailto:aklytton@yahoo.com) <aklytton@yahoo.com>, Department of Chemistry at Northwestern University, 2145 Sheridan Road, Evanston, IL 60208-3113

Authors: [Abigail Lytton-Jean](#), Min Su Han, Byung-Keun Oh, Jungseok Heo, and Chad A. Mirkin

Invited Talk ~ 5:35 – 5:55 PM (20 min.+ 5 min question period after talk): “Protein Arrays for Characterizing the Cell Surface Proteome

Speaker: [Lloyd Smith](mailto:smith@chem.wisc.edu) <smith@chem.wisc.edu>, 1101 University Avenue, Madison, WI 53706-1396

Authors: Lloyd Smith Department of Chemistry, University of Wisconsin-Madison; Genome Center of Wisconsin, University of Wisconsin, Madison, WI

Caroline Alexander and David Beebe, McArdle Lab for Cancer Research, University of Wisconsin-Madison; Andrew Greene, Michael Olivier, Biotechnology & Bioengineering Center, Medical College of Wisconsin, Milwaukee, WI; Jieun Lee, Dora Peelen, Mark Scalf, Michael Shortreed, Ting Zheng, and Xu Zhang, Department of Chemistry, University of Wisconsin-Madison;

Mark Levenstein, WiCell Research Institute, Madison, WI; James Thomson, Genome Center of Wisconsin, University of Wisconsin, Madison, WI

Reception & All Posters of the Day: Duration: 90 min (6:00 PM - 7:30 PM Tuesday, April 25): Golden Cliff Room

Banquet Dinner: Duration: 90 min (7:30 PM - 9:00 PM, Tuesday, April 25): Ballroom I

Wednesday, April 26, 2006:

Track on Principles and Theory of Self-Assembly:

- **Track Chair:** [Leonard Adleman](mailto:adleman@usc.edu) <adleman@usc.edu>, Laboratory for Molecular Science, University of Southern California. Los Angeles, CA
- **CoChair:** [Natasha Jonoska](mailto:jonoska@math.usf.edu) <jonoska@math.usf.edu>, Department of Mathematics, University of South Florida, Tampa, FL

**Continental Breakfast & Posters on Principles and Theory of Self-Assembly: Duration: 90 min (9:00 AM – 10:55 AM Wednesday, April 26)
Location: Ballroom III**

Poster Presentation: “On Creating Shapes in 2D Tile Self Assembly”

Presenter: [Boonsit Yimwadsana](mailto:teddy@ee.columbia.edu) <teddy@ee.columbia.edu>, 1312 Mudd Bldg, Columbia University, 500 W. 120th Street, New York, NY

Authors: Yuliy Baryshnikov Bell Labs, Lucent Technologies; Edward Coffman, and Boonsit Yimwadsana, Columbia University, NYC, NY

Poster Presentation: “Random Energy Model of Self-Assembly”

Presenter: [Russell Deaton](mailto:rdeaton@uark.edu) <rdeaton@uark.edu>, Rm. 311 ENGR, CSCE, University of Arkansas, Fayetteville, AR 72701

Authors: Russell Deaton, Department of Computer Science, University of Arkansas

Poster Presentation: “A Method for Automated Tile Systems Design”

Presenter: [Björn Högberg](mailto:bjorn.hogberg@miun.se) <bjorn.hogberg@miun.se>, Dept. of Physics, Mid Sweden University, SE-851 70 Sundsvall, Sweden

Authors: Björn Högberg, Martin Olsen, and Håkan Olin, Mid Sweden University

Poster Presentation: “Simulation Tools for a Microfluidic DNA Processor”

Presenter: [Zbigniew Sikorski](mailto:zs@cfdr.com) <zs@cfdr.com>, CFD Research Corporation 215 Wynn Dr., Hyntsville, AL 35805

Authors: Rodrigo Teixeira, Zbigniew Sikorski, Andrzej Przekwas, CFDR; Tom Renz, and Clare Thiem, Air Force Research Lab, Rome, NY

Poster Presentation: “The Graph of a Pot with DNA molecules”

Presenter: [Ana Staninska](mailto:staninsk@math.usf.edu) <staninsk@math.usf.edu>, Department of Mathematics, University of South Florida 4202 East Fowler Ave, PHY114 Tampa, FL 33620

Author: Ana Staninska, Department of Mathematics, University of South Florida

Poster Presentation: “SynDCode: Cooperative DNA Code Generating Software”

Presenter: [Anthony Macula](mailto:macula@geneseo.edu) <macula@geneseo.edu>, 36 Westview Cr, Geneseo, NY 14454

Authors: Morgan Bishop and Anthony Macula, JEANSEE, Geneseo, NY 14454; Thomas Renz, Air Force Research Lab, IFTC, Rome NY, 13441

Track on Principles and Theory of Self-Assembly: Duration: 50 min (10:55 AM – 11:45 AM Wednesday, April 26) Location: Ballroom III

Invited Talk ~ 10:55 – 11:15 AM (20 min.+ 5 min question period after talk):

“Internally-specified Heterogeneous Self-reconfiguration”

Speaker: [Zack Butler](mailto:zjb@cs.rit.edu) <zjb@cs.rit.edu> Rochester Institute of Technology, Golisano College of Computing and Information Science, Department of Computer Science, Rochester, NY

Author: Zack Butler Rochester Institute of Technology, Rochester, NY

Contributed Talk ~ 11:20 – 11:40 AM (20 min.+ 5 min question period after talk):

“Thermodynamic analysis of interacting nucleic acid strands”

Contact: [Niles Pierce](mailto:niles@caltech.edu) <niles@caltech.edu>, Caltech, Pasadena, CA

Authors: Robert Dirks, Justin Bois, Joseph Schaeffer, Erik Winfree, and Niles Pierce, Caltech, Pasadena, CA

(Special) Track on Biomedical Nanotechnology, Session A: Duration 35 min (11:45 AM – 12:20 Wednesday, April 26) Location: Ballroom III

Track Keynote Talk ~ 11:45 AM – 12:15 PM (30 min.+ 5 min question period after talk): “Hydrogels Self-Assembled from Block and Graft Copolymers”

Speaker: [Jindrich Kopecek](mailto:Jindrich.Kopecek@m.cc.utah.edu) <Jindrich.Kopecek@m.cc.utah.edu>, Department of Pharmaceutics and Pharmaceutical Chemistry, University of Utah, 30 S 2000 E Rm 201\Salt Lake City, UT 84112

Authors: Jindrich Kopecek, Jiyuan Yang, and Chunyu Xu, University of Utah

Lunch: Duration 60 min (12:20 PM - 1:20 PM Wednesday, April 26): Aerie Restaurant (level 10 of Cliff Lodge)

(Special) Track on Biomedical Nanotechnology, Session B: Duration 100 min (1:20 PM - 3:00 PM Wednesday, April 26) Location: Ballroom III

- **Track Chair:** [Carston R. Wagner](#) <wagne003@tc.umn.edu>, Department of Medicinal Chemistry, University of Minnesota, Minneapolis, MN

Invited Talk ~ 1:20 – 1:40 PM (20 min.+ 5 min question period after talk): “A Protein Cage Made from DNA”

Speaker: [Christoph Erben](#) <christoph.erben@magd.ox.ac.uk>, Clarendon Laboratory, Parks Road, Oxford OX1 3PU, United Kingdom

Authors: Christoph Erben, Russell Goodman, and Andrew Turberfield, University of Oxford

Invited Talk ~ 1:45 – 2:05 PM (20 min.+ 5 min question period after talk): “Assembly of nanoparticles for specific delivery of multiple therapeutic molecules to cancer cells using phi29 motor pRNA”

Speaker: [Peixuan Guo](#) <guop@purdue.edu>, Hansen B036, Cancer Research Center, Purdue University

West Lafayette, IN 47907-2064

Author: Peixuan Guo Department of Pathobiology and Weldon School of Biomedical Engineering, Purdue University

Note Recently, we showed that RNA can be used as a building block for bottom-up assembly in nanotechnology (Nano Letters, 2004, 4: 1717).

Invited Talk ~ 2:10 – 2:30 PM (20 min.+ 5 min question period after talk): “Responsive Peptide-based Materials: Linking peptide folding to Self-Assembly”

Speaker: [Joel Schneider](#) <schneijp@udel.edu>,

Invited Talk ~ 2:35 – 2:55 PM (20 min.+ 5 min question period after talk): “Towards Therapeutic Protein Nanostructures”

Speaker: [Carston R. Wagner](#) <wagne003@umn.edu>

Authors: Carston R. Wagner, Jonathan C. T. Carlson, and Sidhartha S. Jena, University of Minnesota, MN; Michelle Flenniken, Center for Bio-Inspired Nanomaterials, Montana State University, Bozeman, MT; Tsui-fen Chou, University of Minnesota, MN; Ronald A. Siegel, University of Minnesota, MN

Refreshments & Posters on Biomedical Nanotechnology: Duration 25 min (3:00 PM - 3:25 PM Wednesday, April 26) Location: Outside Ballroom III

Poster Presentation: “Aptamer Specific Single-chain Antibodies for the DNA Nanotech Toolbox”

Presenter: [Hanying Li](#) <hl29@duke.edu>

Authors: Hanying Li, Barbara Lipes, Ashini Fernando, and Daniel J. Kenan, Department of Pathology, Duke University; Hao Yan, Arizona State University, Tempe, Arizona; John H. Reif and Thomas H. LaBean, Department of Computer Science, Duke University, North Carolina

Poster Presentation: “Surface Functionalization Strategy for Highly Selective Phage-based Bacterial Detection”

Presenter: [Murat Gel](mailto:gel@ece.ualberta.ca) <gel@ece.ualberta.ca>, University of Alberta, Department of Electrical and Computer Engineering ECERF 9107 116th street, T6G2V4 Edmonton AB, Canada

Authors: Luc Gervais, Devices and Sensors Unit, National Institute for Nanotechnology, Edmonton, Alberta, Canada, Murat Gel (same Devices and Sensors Unit), Stephane Evoy (same Devices and Sensors Unit), Luba Brovko, Canadian Research Institute for Food Safety, University of Guelph, Mansel Griffiths (Canadian Research Institute for Food Safety), Rosemonde Mandeville, Biophage Pharma Inc. 6100 Royalmount Montreal, Quebec, H4P 2R2, Canada, Beatrice Allain (Biophage Pharma Inc.).

Track on Fullerene Nanostructures: *in Memorial to Rick Smalley*, Session A: Duration 35 min (3:25 PM – 4:00 PM Wednesday, April 26) Location: Outside Ballroom III

- **Track Chair:** [Jie Liu](mailto:j.liu@duke.edu) <j.liu@duke.edu>, Department of Chemistry, Duke University, Durham, NC

Track Keynote Talk ~ 3:25 – 3:55 PM (30 min.+ 5 min question period after talk):
“Single Wall Carbon Nanotube Research, Past, Present and Future”

Speaker: [Robert Hauge](mailto:hauge@rice.edu) <hauge@rice.edu>, Rice University, 6100 Main Street, MS 100, Houston, TX, 77005

Author: Robert Hauge and Yaqiong Xu, Rice University.

Refreshments & Posters on Fullerene Nanostructures: Duration 20 min (4:00 PM - 4:20 PM Wednesday, April 26) Location: Outside Ballroom III

Poster Presentation: “Manipulation of quantum information in N@C60 using electron and nuclear magnetic resonance”

Presenter: [Arzhang Ardavan](mailto:arzhang.ardavan@physics.ox.ac.uk) <arzhang.ardavan@physics.ox.ac.uk>, The Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford OX1 3PUm, UK

Author: Ardavan Arzhang, Department of Physics, University of Oxford; John J.L. Morton, Department of Physics and Department of Materials, University of Oxford; Alexei M. Tyryshkin, Department of Electrical Engineering, Princeton University; Simon C. Benjamin, Department of Materials, University of Oxford; Kyriakos Porfyrakis, Department of Materials, University of Oxford
Stephen A Lyon, Department of Electrical Engineering, Princeton University; G. Andrew D. Briggs, Department of Materials, University of Oxford

Poster Presentation: “Dielectrophoretic Assembly of Carbon-based Nanomaterials”
Presenter: [Lixin Dong](mailto:ldong@ethz.ch) <ldong@ethz.ch>, Institute of Robotics and Intelligent Systems (IRIS)

Swiss Federal Institute of Technology (ETH), Zurich CLA H 17.2, ETH-Zentrum, CH-8092 Zurich, Switzerland

Author: Arunkumar Subramanian, Lixin Dong, and Bradley J. Nelson, ETH Zurich; Xinyong Tao and Xiaobin Zhang, Zhejiang University

FNANO Track on Fullerene Nanostructures, Session B: Duration 100 min (4:20 PM - 6:00 PM Wednesday, April 26) Location: Outside Ballroom III

Invited Talk ~ 4:20 – 4:40 PM (20 min.+ 5 min question period after talk): “Quantum transport in nanodevices”

Speaker: [Jerry Bernholc](mailto:bernholc@ncsu.edu) <bernholc@ncsu.edu>, Center for High Performance Simulation, North Carolina State University, Raleigh, NC 27695-7518

Author: Jerry Bernholc, North Carolina State University

Invited Talk ~ 4:45 – 5:05 PM (20 min.+ 5 min question period after talk): “Nucleation and Growth Mechanisms of Single Wall Carbon Nanotubes

Speaker: [Sivaram Arepalli](mailto:sivaram.arepalli@jsc.nasa.gov), <sivaram.arepalli@jsc.nasa.gov>, ERC @ NASA Johnson Space Center, Houston, TX 77058

Author: Jerry Bernholc, North Carolina State University

Contributed Talk ~ 5:10 – 5:30 PM (20 min.+ 5 min question period after talk): “DNA-Decorated Carbon Nanotubes for Chemical and Biological Sensing”

Contact: [Charlie Johnson](mailto:cjohnson@physics.upenn.edu) <cjohnson@physics.upenn.edu>, Department of Physics and Astronomy, University of Pennsylvania, 209 S 33rd St., Philadelphia PA 19104

Author: A.T. Johnson, Cristian Staii, Michelle Chen, and Sam Khamis, University of Pennsylvania

Alan Gelperin, Monell Chemical Senses Center

Invited Talk ~ 5:35 – 5:55 PM (20 min.+ 5 min question period after talk): “Detection of Biomolecules using the Band-Gap Fluorescence of Single Walled Carbon Nanotubes”

Contact: [Michael Strano](mailto:strano@uiuc.edu) <strano@uiuc.edu>,

Author: Michael Strano, UIUC

Reception & All Posters of the Day and Next Day: Duration 90 min (6:00 PM - 7:30 PM Wednesday, April 26) Location: Golden Cliff Room

Thursday, April 27, 2006:

Track on DNA-linked Nanoparticle Structures, Session A: Duration: 35 min (8:45 AM – 9:20 AM Thursday, April 27): Ballroom III

- **Track Chair:** [George C. Schatz](mailto:schatz@chem.northwestern.edu) <schatz@chem.northwestern.edu>, Department of

Chemistry, Northwestern University, Evanston, IL

Track Keynote Talk ~ 8:45 – 9:15 AM (30 min.+ 5 min question period after talk):

“Melting behavior of DNA-linked polymers”

Speaker: [George Schatz](mailto:schatz@chem.northwestern.edu) <schatz@chem.northwestern.edu>, Department of Chemistry, Northwestern University, Evanston IL 60208-3113

Authors: Alexander Kudlay, and George Schatz, Northwestern University

Continental Breakfast & Posters on DNA-linked Nanoparticle

Structures: Duration 60 min (9:20 AM-10:20 AM Thursday, April 27): Outside Ballroom III

Poster Presentation: “Proof-Reading and Error Removal in a Nanomaterial Assembly”

Presenter: [Daryl Wernette](mailto:dwernett@uiuc.edu) <dwernett@uiuc.edu>, 405 N. Mathews Ave., Beckman Institute, University of Illinois, Urbana, IL 61801

Authors: Daryl Wernette, Juewen Liu, and Yi Lu, University of Illinois (Urbana-Champaign)

Poster Presentation: “ Selective Functionalization of Hetero-structured Au-CdSe-Au Nanowires”

Presenter: [Kwan Skinner](mailto:kskinner@physics.unc.edu) <kskinner@physics.unc.edu> ,

Authors: K. Skinner, S. Wahburn, C. Dwyer

Poster Presentation: “Towards a Technology for Anisotropically Functionalized Nanoparticle Dimers”

Presenter: [Björn Högberg](mailto:bjorn.hogberg@miun.se) <bjorn.hogberg@miun.se>, Dept. of Physics, Mid Sweden University, SE-851 70 Sundsvall, Sweden

Authors: Björn Högberg and Håkan Olin, Mid Sweden University

Poster Presentation: “ Tuning Oligonucleotide Derived Nanoparticle Assembly”

Presenter: [Mathew M. Maye](mailto:mmaye@bnl.gov) <mmaye@bnl.gov>, Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, NY, 11973

Authors: Mathew M. Maye, Dmytro Nykypanchuk, Daniel van der Lelie, Oleg Gang, Center for Functional Nanomaterials, Brookhaven National Laboratory

Track on DNA-linked Nanoparticle Structures, Session B: Duration: 100 min (10:20 AM- Noon, Thursday, April 27): Ballroom III

Invited Talk ~ 10:20 – 10:40 AM (20 min.+ 5 min question period after talk): “Disorder and Defects in DNA-Linked Nanoparticle Assemblies”

Speaker: [Ching-Hwa Kiang](mailto:chkiang@rice.edu) <chkiang@rice.edu>, Physics & Astronomy Department, Rice University, Houston, TX 77005

Authors: Ching-Hwa Kiang and Nolan Harris

Invited Talk: ~ 10:45 – 11:05 AM (20 min.+ 5 min question period after talk)
“Thermodynamics of Multiple DNA Hybridization Events on Gold Nanoparticle Surfaces”

Speaker: [Stephen Craig <stephen.craig@duke.edu>](mailto:stephen.craig@duke.edu), Department of Chemistry, Duke University, Durham, NC

Invited Talk ~ 11:10 – 11:30 AM (20 min.+ 5 min question period after talk): “Micelle-Templated, Plasmonic Nanoparticle Chains”

Speaker: [T. Andrew Taton <taton@chem.umn.edu>](mailto:taton@chem.umn.edu), Dept of Chemistry, Univ of Minnesota

Contributed Talk 11:35 – 11:55 AM (20 min.+ 5 min question period after talk):
“Controlling the Attractive and Repulsive Interactions Between DNA Functionalized Particles”

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