4th Annual Conference on FOUNDATIONS OF NANOSCIENCE: SELF-ASSEMBLED ARCHITECTURES AND DEVICES (FNANO07)

DATES of FNANO07: April 18 – April 21, 2007

FNANO07 Announcement: [PDF] [TXT] [HTML]
http://www.cs.duke.edu/~reif/FNANO/FNANO07/FNANO07.html

FNANO07 Webpage: http://www.cs.duke.edu/~reif/FNANO/FNANO07/

LOCATION: Snowbird Cliff Lodge, Snowbird, Utah

HOTEL Accommodations: http://www.cs.duke.edu/~reif/FNANO/FNANO07/venue.html

FNANO07 Conference Registration pages (Registration will be open starting February 5, 2007)

• If you are a Contributing Speaker, regular participant, or student participant (and NOT a Track Chair, Track co-Chair, Invited Speaker, Keynote Speaker, Conference Organizer, or Assistant): click here:
  http://fnano07.cs.duke.edu/registration/fnano-registration_2.php

• ONLY If you are a Track Chair, Track co-Chair, Invited Speaker, Keynote Speaker, Conference Organizer, or Assistant: click here: http://fnano07.cs.duke.edu/registration/fnano-registration_1.php

SUPPORTING ORGANIZATIONS: Air Force Office of Scientific Research (AFOSR), Defense Advanced Research Projects Agency (DARPA), and Nanorex, Inc.

FNANO Program Schedule:

LOCATION: Snowbird Cliff Lodge, Snowbird, UT,


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

FNANO06 Program CoChair:
• Paul Weiss <stm@psu.edu>, Department of Chemistry, Pennsylvania State University, University Park, PA

Conference Reception Desk: Location: Outside Ballroom

Talk Durations:
Invited Talks: (20 min. + 5 min question period after talk) = 25 min. total duration
Keynote Talks: (30 min. + 5 min question period after talk) = 35 min. total duration

Wednesday, April 18, 2007

Track on Viral Self-Assembly, Session A: 8:30 AM – 9:30 AM

Wednesday, April 18
• Track Chair: M.G Finn <mgfinn@scripps.edu>, Department of Chemistry and The Skaggs Institute for Chemical Biology, Scripps Research Institute, La Jolla, CA
• CoChair: Morley Stone <morley.stone@wpafb.af.mil>, Materials and Manufacturing Directorate, Air Force Research Laboratory

Duration: (1 Keynote Talk + 1 other talks) = 35+1*25 min. = 60 min
Location: Ballroom 1

Keynote Talk: RNA size and packageability: Small-angle scattering studies of viral RNAs
Speaker: Chuck Knobler <knobler@chem.ucla.edu> (Department of Chemistry and Biochemistry, University of California, LA, CA)

Invited Talk: Assembling viral nanoparticles for vascular imaging and tumor-specific targeting
Speaker: Marianne Manchester <marim@scripps.edu>
Authors: Giuseppe Destito, John Lewis, Heidi Stuhlmann, M.G. Finn, Marianne Manchester (The Scripps Research Institute, La Jolla, CA)
Refreshments & Poster Session 9:30 AM – 10:20 AM Wends, April 18  
Location: Outside Ballroom 1

Posters for Track on Viral Self-Assembly 10:20 AM – 9:55 AM Wends, April 18  
Poster: Assembly models for Papovaviridae based on Viral Tiling Theory  
Presenter: Anne Taormina <anne.taormina@durham.ac.uk>  
Authors: Anne Taormina (Department of Mathematical Sciences, Durham University, Durham, UK), Reidun Twarock, Thomas Keef (York University, York, UK)

Posters for Track on Molecular Electronic Devices & Circuit Assembly 9:30 AM – 10:20 AM Wends, April 18  
Poster: Pyrenecyclodextrin-Decorated Single-Walled Carbon Nanotubes as Chemical Sensors  
Presenter: Yan-Li Zhao <ylzhao@chem.ucla.edu>  
Authors: Yan-Li Zhao, Liangbing Hu William Dichtel, George Graner, Fraser Stoddart (Department of Chemistry and Biochemistry, University of California at Los Angeles, LA, CA)

Track on Viral Self-Assembly, Session B: 10:20 AM – 10:45 AM  
Wednesday, April 18  
Duration: (1 talk)= 25 min  
Location: Ballroom 1

Invited Talk: Viral fusion elements for nanoparticle assembly  
Speaker: David Wright <david.wright@vanderbilt.edu> (Vanderbilt University)  
Authors: Ryan Rutledge, Scott Miller, James Crowe, David Wright (Vanderbilt University, Nashville, TN)

Track on Molecular Electronic Devices & Circuit Assembly, Session A: 10:45 AM – 12:25 PM Wednesday, April 18  
Track Chairs: James R. Heath <heath@caltech.edu>, Department of Chemistry, California Institute of Technology, Los Angeles, CA  
coChair: Pat Collier <collier@caltech.edu>, California Institute of Technology, Pasadena, CA  
Duration: (1 Keynote Talk+3 other talks)= 35+3*25 min=110 min  
Location: Ballroom 1

Keynote Talk: Reticular Chemistry and the design of new materials  
Speaker: Omar Yaghi <yaghi@chem.ucla.edu> (Department of Chemistry & Biochemistry, UCLA, LA, CA)

Invited Talk: Biochemical Reaction Dynamics in Nanoscale Environments


Speaker: Pat Collier <collier@caltech.edu> (California Institute of Technology, Pasadena, CA)

**Invited Talk:** Effects of catalyst and dopant atoms on the electronic properties of self-assembled semiconductor nanowires
Speaker: Lincoln Lauhon <lauhon@northwestern.edu> (Materials Science and Engineering, Northwestern University, Evanston, IL)

**Invited Talk:** Scanning-Probe Microscopy of Organic Semiconductor Interfaces and Nanostructured Photovoltaics
Speaker: David Ginger <ginger@chem.washington.edu> (Department of Chemistry, University of Washington, Seattle WA)

**Lunch Break:** 12:25 PM – 1:25 PM Wednesday, April 18

**Track on Molecular Electronic Devices & Circuit Assembly, Session B:** 1:25 PM – 2:15 PM Wednesday, April 18
- **Track Chairs:** James R. Heath <heath@caltech.edu>, Department of Chemistry, California Institute of Technology, Los Angeles, CA
- **coChair:** Pat Collier <collier@caltech.edu>, California Institute of Technology, Pasadena, CA
**Duration:** (2 talks)= 2*25 min. = 50 min
**Location:** Ballroom 1

**Invited Talk:** Multiparameter Disease Diagnostics: Chemical Challenges and Analytical Opportunities
Speaker: Ryan Bailey <rbailey@scs.uiuc.edu> (Department of Chemistry, University of Illinois, Urbana-Champaign, IL)

**Contributed Talk:** Orbital-Mediated Tunneling (OMT) in a Unimolecular Rectifier
Speaker: Robert Metzger <rmetzger@ua.edu> (Department of Chemistry, University of Alabama, Tuscaloosa, AL)

**Track on Self-Assembled DNA Nanostructures: Session A:** 2:15 PM – 2:50 PM Wednesday, April 18
Track on Self-Assembled DNA Nanostructures: Session A
**Track Chair:** Nadrian Seeman <ned.seeman@nyu.edu> (Department of Chemistry, New York University, New York, NY)
- **coChair:** Chendge Mao <mao@purdue.edu> (Department of Chemistry, Purdue University, West Lafayette, IN)
**Duration:** (1 Keynote Talk)= 35 min
**Location:** Ballroom 1

**Keynote Talk:** Parallel, Chip-based Integration of DNA and DNA-Nanoparticle-Conjugate Structures
Speaker: Wolfgang Fritzsche <fritzsche@ipht-jena.de>, Institute of Physical High Technology Jena, Germany

Refreshments & Poster Session 2:50 PM – 3:50 PM Wednesday, April 18
Location: Outside Ballroom 1

Posters for Track on Self-Assembled DNA Nanostructures

**Poster:** Proofreading in DNA Crystals that Copy Information
Presenter: Sung Ha Park <spark@centrosome.dna.caltech.edu>
Authors: Sung Ha Park, Paul W. K. Rothemund, and Erik Winfree (California Institute of Technology, Pasadena, CA)

**Poster:** Activatable DNA tiles for compact Error-resilient Directional Assembly
Presenter: Urmi Majumder <urmim@cs.duke.edu>
Authors: Urmi Majumder, Thomas Labean, and John H. Reif (Department of Computer Science, Duke University, Durham, NC)

**Poster:** Disentangling Kinetics and Energetics in DNA Nanostructure Assembly: Forming Parallel Double Crossover Molecules
Presenter: William Sherman <wsherman@bnl.gov> (Brookhaven National Laboratory, Upton, NY)

**Poster:** A Self-Assembled DNA Bipyramid
Presenter: Christoph Erben <christoph.erben@magd.ox.ac.uk>
Christoph Erben, Russell Goodman, and Andrew Turberfield (Department of Physics, Clarendon Laboratory, University of Oxford, Oxford, UK)

**Poster:** A Multiple microRNA Detection System Based on Computational Self-Assembly of DNA-Gold Nanoparticles
Presenter: Kyung Ae Yang <kayang@bi.snu.ac.kr>
Authors: Kyung Ae Yang, Ji-Hoon Lee, In-Hee Lee, Byoung-Tak Zhang (Seoul National University, Kwanak-gu, Seoul, Korea)

**Poster:** Title DNA directed Self-assembly of Multi-component Nanoarchitectures
Presenter: Hao Yan <hao.yan@asu.edu> (Center for Single Molecule Biophysics, The Biodesign Institute, Arizona State University, Tempe, AZ)

**Poster:** Heat-resistant DNA arrays constructed by self-assembly
Presenter: Miho Tagawa <tagawa@genta.c.u-tokyo.ac.jp>
Authors: Miho Tagawa, Koh-ichiroh Shohda (Department of Life Sciences and Institute of Physics, University of Tokyo, Tokyo, Japan), Kenzo Fujimoto (School of Material Science, Japan Advanced Institute of Science and Technology, Japan), Akira Suyama (University of Tokyo)
**Poster: Single Strand DNA Tiles and Molecular Tubes with Precisely Programmable Circumferences**
Presenter: Peng Yin <py@caltech.edu>
Authors: Peng Yin, Rizal Hariadi (Caltech, Pasadena, CA), Sudheer Sahu (Duke University, Durham, NC), Harry Choi, Sung Ha Park, Bethany Walters (Caltech, Pasadena, CA), Thom Labeau, John Reif (Duke University, Durham, NC)

**Poster: FRET Detection of DNA on Superparamagnetic Silica Nanoparticles**
Presenter: Sophie Tan <sophie.tan@hotmail.com>
Authors: Sophie Tan, Benoit Simard, (Steacie Institute for Molecular Sciences, National Research Council of Canada, Ottawa, Ontario, Canada), Sébastien Dubus, Isabelle Charlebois, Mario Leclerc (Université Laval, Québec, Quebec)

**Poster: A Designed Two-Dimensional DNA Array: The Three-Layer Logpile**
Presenter: Jonathan Malo <jonathan.malo@physics.ox.ac.uk>
Authors: Jonathan Malo, James Mitchell (University of Oxford), Robin Harris (University of Mainz), Andrew Turberfield (Department of Physics, Clarendon Laboratory, University of Oxford, Oxford, UK)

**Track on Self-Assembled DNA Nanostructures: Session B: 3:50 PM – 5:20 PM Wednesday, April 18**
**Duration:** (4 talks)= 4*25 min. = 100 min
**Location:** Ballroom 1

**Contributed Talk: 2D DNA Arrays Used to Organize DNA-Based Devices, DNAzymes and Metallic Nanoparticles**
Speaker: Nadrian Seeman <ned.seeman@nyu.edu>
Authors: Baoquan Ding, Alejandra Garibotti, Jiwen Zheng, Pamela Constantinou, and Nadrian Seeman (Department of Chemistry, New York University, New York, NY)

**Contributed Talk: DNA-nanotube-enabled alignment of membrane proteins for NMR structure determination**
Speaker: William Shih <William_Shih@dfci.harvard.edu>
Authors: William Shih, Shawn Douglas, and James Chou (Dana-Farber Cancer Institute, Boston, MA)

**Contributed Talk: Sculpting addressable and responsive nano-architectures using a three-dimensional structure syntax of RNA**
Speaker: Luc Jaeger <jaeger@chem.ucsb.edu>
Authors: Cody Geary, Isil Severcan, Erik Verzemnieks, Arkadiusz Chworos, Luc Jaeger, (Chemistry and Biochemistry Dept., PSBN4649A, University of California, Santa Barbara, CA)

**Contributed Talk: Quadruplex-based DNA nanostructures and nanodevices**
Speaker: Jean-Louis Mergny <mergny@mnhn.fr>
Thursday, April 19, 2007

Track on Nanoplasmonics & Nanovoltaics: 8:30 AM – 10:20 AM
Thursday, April 19
  ▪ Track Chair: Rick Kiehl <kiehl@ece.umn.edu>, Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN
  Duration: (Keynote+3 talks)= 35+3*25. =110 min
  Location: Ballroom 1

Keynote Talk: Plasmonics: an Enabling Technology for Nanoscience and Defense Applications
Speaker: Naomi J. Halas <halas@ece.rice.edu> (Laboratory for Nanophotonics, Rice University, Houston, TX)

Invited Talk: Ultrafast Processes in Molecular and Plasmonic Hybrid Nanostructures
Speaker: Gary Wiederrecht <wiederrecht@anl.gov>
(Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL)

Invited Talk: Plasmonic Nanostructures: Arrays of Holes and Particles
Speaker: Teri W. Odom <todom@northwestern.edu> (Northwestern University, Evanston, IL)

Invited Talk: Quantum-dot-sensitized nanowire solar cells
Speaker: Eray S. Aydil <aydil@umn.edu>
Authors: Eray S. Aydil1, Kurtis S. Leschkies, Ramachandran Divakar1, Joysurya Eray Aydil, Kurtis Leschkies, Emil Enache-Pommer, Janice Boercker, David Norris, Uwe Kortshagen, C. Barry Carter, Ramachandran Divakar, Joysurya Basu (University of Minnesota, Minneapolis, MN)

Refreshments & Poster Session 10:20 AM – 11:25 AM Thursday, April 19
Location: Outside Ballroom 1

Posters for Track on Molecular Motors
Poster: Control schemes for an autonomous DNA nanomotor
Presenter: Josh Bishop <jdbishop@u.washington.edu>
Authors: Josh Bishop and Eric Klavins (Department of Electrical Engineering, University of Washington, Seattle, WA)

Poster: Convergent Synthesis of Mechanically Interlocked Compounds using Click Chemistry
Presenter: Jason Spruell <jspruell@chem.ucla.edu>
Authors: Jason Spruell, William Dichtel, Ognjen Miljanic, Fraser Stoddart (University of California, LA, CA)

Poster: Wear in active nanosystems powered by biomolecular motors
Presenter: Henry Hess <hess@mse.ufl.edu>
Authors: Yoli Jeune and Henry Hess (University of Florida, Gainesville, FL)

Poster: Highly Convergent Synthesis of Rotaxanes Using Click Chemistry
Presenter: William Dichtel <wdichtel@chem.ucla.edu>
Authors: William Dichtel, Ognjen Miljanic, Ivan Aprahamian, Adam Braunschweig (California Nanosystems Institute; Dept. of Chemistry, UCLA) James Heath (Dept. of Chemistry, Caltech), Fraser Stoddart (California Nanosystems Institute; Dept. of Chemistry, UCLA)

Poster: Oscillator for self-assembled DNA nanomachines
Presenter: Masahiro Takinoue <takinoue@genta.c.u-tokyo.ac.jp>
Authors: Masahiro Takinoue (University of Tokyo), Daisuke Kiga (Tokyo Institute of Technology), Koh-ichiroh Shohda, Akira Suyama (University of Tokyo, Tokyo, Japan)

Poster: A Kinesin-based Molecular Shuttle
Presenter: Helen Carstairs <h.carstairs@physics.ox.ac.uk>
Authors: Helen Carstairs (University of Oxford), Junichiro Yajima, Marie Curie Research Institute, Jonathan Bath (University of Oxford), Robert Cross (Marie Curie Research Institute), Andrew Turberfield (University of Oxford, Oxford, UK)

Poster: Cucurbit[6]uril-Based Biocompatible Nanovavles
Presenter: Ying-Wei Yang <yyang@chem.ucla.edu>
Authors: Ying-Wei Yang, Sarah Angelos, Kaushik Patel, William Dichtel, Jeffrey Zink, Fraser Stoddart (University of California, LA, CA)

Track on Molecular Motors: 11:25 AM – 12:50 PM, Session A:
Thursday, April 19
- Track Chair: Andrew Turberfield <a.turberfield@physics.ox.ac.uk>, (Department of Physics, Oxford University, Oxford, UK)
Duration: (1 Keynote Talk + 2 other talks)= 35+2*25 min. =85 min
Location: Ballroom 1

Keynote Talk: How myosin motors work
Invited Talk: Motion and Power Generation in Chemically Driven Wholly Synthetic Muscles
Speaker: Jon Howse <j.r.howse@sheffield.ac.uk> (Department of Physics, Sheffield University, UK)
Authors: Jonathan Howse, Tony Ryan, Richard Jones, Paul Topham (Sheffield University, UK), Wim Bras (European Synchrotron Radiation Facility, Grenoble, France), Anthony Gleeson (Synchrotron Radiation Source, Daresbury, UK)

Invited Talk: A microrotary motor powered by bacteria
Speaker: Yuichi Hiratsuka <yhira@jaist.ac.jp> (School of Materials Science, Japan Advanced Institute of Science and Technology (JAIST), Ishikawa, Japan)

Lunch Break: 12:50 PM - 1:50 PM Thursday, April 19

Track on Molecular Motors: 1:50 PM – 2:15 PM, Session B: Thursday, April 19
- Track Chair: Andrew Turberfield <a.turberfield@physics.ox.ac.uk>, (Department of Physics, Oxford University, Oxford, UK)
Duration: (1 talk)= 25 min
Location: Ballroom 1

Invited Talk: Molecular chaperones- cellular machines for protein folding
Speaker: Johannes Buchner <johannes.buchner@ch.tum.de> (Department Chemie, Technische Universitaet Muenchen, Garching, Germany)

Track on Self-Assembled Surface Chemistry: 2:15 PM - 3:40 PM
Thursday, April 19
- Track Chair: Lloyd Smith <smith@chem.wisc.edu> (Department of Chemistry, University of Wisconsin, Madison, WI)
- CoChair: Paul Weiss <stm@psu.edu> (Department of Chemistry, Pennsylvania State University, University Park, PA)
Duration: (1 Keynote Talk + 2 other talks)= 35+2*25 min. = 85 min
Location: Ballroom 1

Keynote Talk: Label-Free Detection of Kinase Activities and Protein-Protein Interactions on BioChips
Speaker: Milan Mrksich <mmrksich@uchicago.edu> (Howard Hughes Medical Institute, University of Chicago, Chicago, IL)

Invited Talk: Self- and Directed Assembly of Functional Nanoscale Structures
Speaker: Paul Weiss <stm@psu.edu> (Department of Chemistry, Pennsylvania State
Contributed Talk: Assembly of a simple self-replicating nanoscale aggregate
Speaker: Pierre-Alain Monnard <pmonnard@lanl.gov>
Authors: Pierre-Alain Monnard, James, A. Bailey, James, M. Boncella, Michael, S. Declue, Hans-Joachim Ziock Steen Rasmussen (Los Alamos National Laboratory, Earth and Environmental Sciences, Los Alamos, NM)

Refreshments & Poster Session 3:40 PM – 4:30 PM Thursday, April 19
Location: Outside Ballroom 1

Posters on Track on Self-Assembled Surface Chemistry
Poster: Aerosol-Based Methods for Monolayer Self-Assembly on Silicon Nanoparticles
Presenter: Jeffrey Roberts <roberts@chem.umn.edu>
Authors: Jeffrey Roberts and Jason Holm (Department of Chemistry, University of Minnesota, Minneapolis, MN)

Posters on Principles and Theory of Self-Assembly
Poster: Experiments in Stochastic Self Assembly
Presenter: Boonsit Yimwadsana <by35@columbia.edu>
Authors: Yuliy Baryshinkov (Bell Laboratories, Lucent Technologies, Murray Hill, NJ), Ed Coffman and Boonsit Yimwadsana (Columbia University, New York, NY)

Poster: Error Correction With Arbitrarily Small Resolution Loss
Presenter: Ho-Lin Chen <holin@stanford.edu>
Authors: Ho-Lin Chen, Ashish Goel, and Chris Luhrs (Stanford University, Palo Alto, CA)

Poster: Reversible self-assembly of squares as a rapidly mixing markov chain
Presenter: Urmi Majumder <urmim@cs.duke.edu>, Department of Computer Science, Duke University, Durham. NC
Authors: Urmi Majumder, Sudheer Sahu, and John H. Reif (Department of Computer Science, Duke University, Durham. NC)

Poster: Expand the Single Template method to Multiple Template Method in DNA Computing
Presenter: Wenbin Liu <wbliu@mail.hust.edu.cn> (College of Computer Science and Technology, Wenzhou University, Wenzhou City, China)

Poster: Adding, Multiplying, and Factoring in the Tile Assembly Model
Presenter: Yuriy Brun <ybrun@usc.edu> (Computer Science Department, University of Southern California, Los Angeles, CA)

Poster: A Scheme for 2-D Primitive Blocks Self-Assembling
Presenter: Vojislav Stojkovic <stojkovi@jewel.morgan.edu>
Authors: Vojislav Stojkovic & Samir Tannouri, (Computer Science Department, Morgan State University, Baltimore, MD) and Hongwei Huo (Xidian University, Shaanxi, China)

**Poster:** Self-Assembly of Viral Capsids via a Hamiltonian Paths Approach: The Case of Bacteriophage MS2  
Presenter: Tom Keef <tk506@york.ac.uk> (Department of Mathematics, University of York, York UK)

**Poster:** Application of molecular dynamics simulations in the design of a minimal self-replicating molecular machine  
Presenter: Pawel Weronski <pawel@lanl.gov>  
Authors: Pawel Weronski, Yi Jiang, and Steen Rasmussen (Theoretical Division, Los Alamos National Lab, Los Alamos, NM)

**Track on Principles and Theory of Self-Assembly, Session A: 4:30 PM – 5:55 PM -Thursday, April 19**  
**Chair:** Natasha Jonoska <jonoska@tarski.math.usf.edu> (Department of Mathematics, University of South Florida, FL)  
**Duration:** (1 Keynote Talk + 2 other talks)= 35+2*25 min. =85 min  
**Location:** Ballroom 1

**Keynote Talk:** Markov Chain Convergence and the Efficiency of Some Self-Assembly Models  
Speaker: Dana Randall <randall@cc.gatech.edu> (College of Computing, Georgia Institute of Technology, Atlanta, GA)

**Invited Talk:** On growth in 2D structures, Mathematical and Algorithmic Sciences  
Speaker: Yuliy Baryshnikov <ymb@research.bell-labs.com> (Bell Laboratories, Lucent Technologies, Murray Hill, NJ)

**Invited Talk:** Formalizing Nanostructure Description  
Speaker: Gregory McColm <mccolm@cas.usf.edu>  
Authors: Gregory McColm and Natasha Jonoska (Department of Mathematics, University of South Florida, Tampa, FL)

**Combined Poster Session for All Posters of Day & Reception: 6:00 PM – 7:00 PM Thursday, April 19**  
**Location:** Golden Cliff Room

**ISNSCE Business Meeting: 7:00 PM – 7:30 PM Thursday, April 19**  
- **ISNSCE Meeting Chair:** Andrew Turberfield <a.turberfield@physics.ox.ac.uk>, (Department of Physics, Oxford University, Oxford, UK)  
**Location:** Golden Cliff Room
Friday, April 20, 2007

Track on Principles and Theory of Self-Assembly, Session B: 8:30 AM – 9:20 AM Friday, April 20
   Chair: Natasha Jonoska <jonoska@tarski.math.usf.edu> (Department of Mathematics, University of South Florida, FL)
   Duration: (2 talks)= 2*25 min. = 50 min
   Location: Ballroom 1

Invited Talk: A Hamiltonian Paths Approach to Viral Capsid Assembly of RNA Viruses Based on a Novel Symmetry Principle
   Speaker: Reidun Twarock <rt507@york.ac.uk> (York Centre for Complex Systems Analysis, University of York, York, UK)

Contributed Talk: Autonomous Programmable Nanorobotic Devices Using DNAzymes
   Speaker: Sudheer Sahu <sudheer@cs.duke.edu>
   Authors: John H. Reif and Sudheer Sahu (Department of Computer Science, Duke University, Durham, NC)

Refreshments & Poster Session 9:20 AM – 10:20 AM Friday, April 20
   Location: Outside Ballroom 1

Posters for Track on Self-assembled Computer Circuit and System Architectures
   Poster: Dynamic Low-Density Parity Check Codes for Fault-tolerant Nano-scale Memory
   Presenter: Shalini Ghosh <shalini@csl.sri.com> (Computer Science Laboratory, SRI International, Menlo Park, CA)

Track on Principles and Theory of Self-Assembly, Session C: 10:20 AM – 11:10 AM Friday, April 20
   Chair: Natasha Jonoska <jonoska@tarski.math.usf.edu> (Department of Mathematics, University of South Florida, FL)
   Duration: (2 talks)= 2*25 min. = 50 min
   Location: Ballroom 1

Contributed Talk: NUPACK: a web-based tool for the analysis and design of nucleic acid systems
   Speaker: Niles Pierce <niles@caltech.edu> (Caltech, Pasadena, CA)
   Authors: Joseph Zadeh, Justin Bois, Marshall Pierce, Robert Dirks, and Niles Pierce

Contributed Talk: A simple model of self-replicating protocells
Speaker: Harold Fellermann <harold.fellermann@upf.edu>
Authors: Harold Fellermann, Steen Rasmussen, Hans-Joachim Ziock (Los Alamos National Laboratory, Los Alamos NM)

**Track on Self-assembled Computer Circuit and System Architectures:**
11:10 AM – 12:00 PM Friday, April 20
- **Track Chairs:** 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

**Duration:** (2 talks) = 2*25 min. = 50 min
**Location:** Ballroom 1

**Invited Talk:** Statistically Self-Assembled nanoPLA Logic
Speaker: Andre DeHon <andre@seas.upenn.edu> (Dept. of Electrical and System Engineering, University of Pennsylvania, Philadelphia, PA)

**Invited Talk:** Expanders and Self-Assembled Architectures
Speaker: Alexander Gamburd <agamburd@ucsc.edu>
Authors: Alexander Gamburd (University of California at Santa Cruz), Ming-Hsuan Kang (Pennsylvania State University), Philip Kuekes (Hewlett-Packard Laboratories), Wen-Ching Winnie Li (Pennsylvania State University), Pascal Vontobel (Hewlett-Packard Laboratories)

**Track on Biomedical Nanotechnology, Session A:**
12:00 PM - 12:25 PM Friday, April 20
- **Description:** Talks & posters in this track present biomedical applications of nanoscience.
- **Track Chair:** Carston R. Wagner <wagne003@tc.umn.edu>, Department of Medicinal Chemistry, University of Minnesota, Minneapolis, MN
- **Track coChair:** Thomas LaBean <thl@cs.duke.edu>, Department of Computer Science, Duke University, Durham, NC

**Duration:** (1 talk) = 25 min
**Location:** Ballroom 1

**Invited Talk:** Oligomer-Function Relationships: Case Study of Adiponectin, a Multimeric Hormone Implicated in Metabolic Disease
Speaker: David H. Lee <dave.lee@tufts.edu>
Authors: Shinji Suzuki (Tufts University), Elizabeth Wilson-Kubalek (Scripps Research Institute David Wert, Tsu-Shuen Tsao (University of Arizona), Cory Rillahan, Martha Simmons, David Lee (Department of Chemistry, Tufts University, Medford, MA)

**Lunch Break:**
1:25 PM - 1:45 PM Friday, April 20

**Track on Biomedical Nanotechnology, Session B:**
1:45 PM - 3:10 PM -
Friday, April 20

Duration: (1 Keynote Talk + 2 other talk) = 35+2*25 min. = 85 min

Keynote Talk: Why are Gold Nano-Particles More Precious Than Pretty Gold, Fundamentals and Some Applications
Speaker: Mostafa A. El-Sayed <mostafa.el-sayed@chemistry.gatech.edu> (Department of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA)

Invited Talk: Controlled Encapsidation and Delivery of a Payload by a Plant Viral Nanoparticle
Speaker: Stefan Franzen <Stefan_Franzen@ncsu.edu>
Authors: LiNa Loo, Richard H. Guenther, Steven A. Lommel, Stefan Franzen (Department of Chemistry and Department of Plant Pathology, North Carolina State University, Raleigh, NC)

Contributed Talk: Metal Sulfide Nanoparticle Based Electrochemical Biosensors
Speaker: Kurt Gothelf <kvg@chem.au.dk>
Presenter: Jacob Hansen, Rupa Mukhopadhyay, Jonas Hansen, Vadim Sumbayev and Kurt Gothelf (Center for DNA nanotechnology and iNANO, Aarhus University, Arhus, Denmark)

Refreshments & Poster Session 3:10 PM – 4:10 PM Friday, April 20

Location: Outside Ballroom 1

Posters for Track on Biomedical Nanotechnology

Poster: Preparation and Investigation of Octa(3-aminopropyl) Silsesquioxane L-Lysine Dendrimers for Nucleic Acid Delivery
Presenter: Zheng-Rong Lu
Authors: Todd Kaneshiro, Xuli Wang, Zheng-Rong Lu (Dept. of Pharmaceutics, University of Utah, Salt Lake City, UT)

Poster: Enzyme-Triggered Biocompatible Nanovalves
Presenter: Kaushik Patel <kaushik@chem.ucla.edu>
Authors: Kaushik Patel, Sarah Angelos, Ali Coskun, Ying-Wei Yang, William Dichtel, Fraser Stoddart (Department of Chemistry and Biochemistry, Los Angeles, CA)

Poster: Coupling Computing, Movement, and Drug Release
Presenter: Steven Taylor <st2171@columbia.edu>
Authors: Rejun Pei, Steven Taylor, Milan Stojanovic, (Columbia University, Department of Medicine, Division of Nephrology, New York, NY)

Poster: Towards programmable Drug Delivery Systems
Presenter: Tim Liedl <tim.liedl@physik.lmu.de>
Authors: Tim Liedl, Hendrik Dietz, Bernard Yurke (Bell Labs), Friedrich Simmel (Center...
Poster: Biomolecule-modified Nanoparticles as Affinity Capture Probes
Presenter: Arnold Kell <arnold.kell@nrc.ca>
Authors: Arnold Kell, Benoit Simard (Steacie Institute for Molecular Sciences, National Research Council of Canada, Ottawa, Ontario, Canada), Gale Stewart, Maurice Boissinot, Ann Huletsky, Michel Bergeron, (Centre de Recherche en Infectiologie, Université Laval, Québec, Quebec)

Poster: Superparamagnetic nanoparticles for Pathogen Capture
Presenter: Kanchana Somaskandan <Kanchana.Somaskandan@nrc-cnrc.gc.ca>
Authors: Kanchana somaskandan, Arnold Kell, Benoit Simard (National Research Council of Canada, Ottawa, Ontario, Canada)

Poster: Prediction of protein/ion binding sites, affinities and specificities with a geometrical knowledge based scoring function.
Presenter: Gong Cheng <gcheng@u.washington.edu>
Authors: Gong Cheng, David Baker, Ram Samudrala (University of Washington, Seattle, WA)

Posters for Track on Self-assembly Across Scales
Poster: Scaling metal contacts for capillary-force driven micro-component self-assembly
Presenter: Christopher Morris <cjmorris@u.washington.edu>
Authors: Christopher Morris, Babak Parviz (Electrical Engineering, University of Washington, Seattle, WA)

Poster: Micrometric Droplets Motion
Presenter: Gragory Mermoud <gregory.mermoud@epfl.ch>
Authors: Gragory Mermoud, Vahid Fakhfouri, Alcherio Martinoli, Jargen Brugger (Swarm-Intelligent Systems Research Group, Laboratory of Microsystems and Nanoengineering, Lausanne, Switzerland)

Poster: Global-to-Local Rule Generation for Self-Assembly and Self-Repair by Active Robots
Presenter: Daniel Arbuckle <daniel.arbuckle@usc.edu>
Authors: Daniel Arbuckle and Aristides Requicha (Department of Computer Science, University of Southern California, LA, CA)

Track on Self-assembly Across Scales: 4:10 PM - 6:00 PM Friday, April 20

Track on Self-assembly Across Scales: (April 19 afternoon or later)
- 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
**Keynote Talk:** Biologically-Inspired Swarms of Robots  
**Speaker:** Vijay Kumar <kumar@grasp.upenn.edu> (Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Philadelphia, PA)

**Contributed Talk:** An Extended State-Space Markov Chain Model for Self-Organizing Systems in Non-Well-Mixed Environments  
**Speaker:** Nils Napp <nnapp@u.washington.edu>  
**Authors:** Nils Napp, Eric Klavins (Department of Electrical Engineering, University of Washington, Seattle, WA)

**Contributed Talk:** Improving Conformality in Selective Dip-Coating of Patterned Planar Substrates  
**Speaker:** Massimo Mastrangeli <massimo.mastrangeli@imec.be>  
**Authors:** Massimo Mastrangeli (IMEC/Katholieke Universiteit Leuven, Belgium), Wouter Ruythooren, Kris Baert, Chris Van Hoof (IMEC, Belgium), Jean-Pierre Celis (Katholieke Universiteit Leuven, Belgium)

**Contributed Talk:** Merging Assembly Concepts from Meso- to Micro Scale  
**Presenter:** Erik Jung <erik.jung@izm.fhg.de>  
**Authors:** Erik Jung (Fraunhofer IZM, Berlin, Germany), Panos Lazarou (University of Patras, Patras, Greece)

**Combined Poster Session for All Posters of Day & Reception:** 6:00 PM – 7:00 PM Friday, April 20  
**Location:** Golden Cliff Room

**Session on Nanoscience Business:** 7:00 PM – 8:00 PM Friday, April 20  
- **Track Chair:** Doug Jamison <doug@TinyTechVC.com>, President and CEO, Harris & Harris Group, New York, NY  
- **Track coChair:** Mark A. Parsells<mparsells@montpelierventures.com>, Montpelier Ventures, LLC, Montchanin, DE  
- **Other Panel Members:** To be Announced  
**Location:** Ballroom 1

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**Saturday, April 21, 2007**

**Track on Fullerene Nanostructures, Session A:** 8:00 AM - 9:25 AM  
**Saturday, April 21**  
- **Track Chair:** Jie Liu <j.liu@duke.edu>, Department of Chemistry, Duke
University, Durham, NC  
Duration: (1 Keynote Talk +2 other talks)= 35+2*25 min. =85 min  
Location: Ballroom 1

**Keynote Talk:** Selective etching of metallic carbon nanotubes by gas-phase reaction
Guangyu Zhang <gyzhang@stanford.edu>,
Authors: Guangyu Zhang <gyzhang@stanford.edu>, Pengfei Qi, Xinran Wang, Yuerui Lu, Xiaolin Li, Ryan Tu, Sarunya Bangsaruntip, David Mann, Li Zhang and Hongjie Dai <hdai1@stanford.edu> (Department of Chemistry, Stanford University, Palo Alto, CA)

**Invited Talk:** Evolution of SU(4) Transport Regimes in Carbon Nanotube Quantum Dots
Speaker: Gleb Finkelstein <gleb@duke.edu>
Authors: Alex Makarovsky, Jie Liu, Gleb Finkelstein (Duke University Durham, NC)

**Invited Talk:** Recent Advancements and Applications of "Super-Growth" Carbon Nanotubes
Speaker: Takeo Yamada <takeo-yamada@aist.go.jp>
Authors: Kenji Hata <kenji-hata@aist.go.jp>, Takeo Yamada <takeo-yamada@aist.go.jp> (AIST / Research Center for Advanced Carbon Materials, Japan)

**Refreshments & Poster Session 9:25 AM –10:25 AM Saturday, April 21**
Location: Outside Ballroom 1

**Posters for Track on Fullerene Nanostructures 9:25 AM –10:25 AM Saturday, April 21**

**Poster(Invited):** Fabrication and Applications of Carbon Nanotube Fibrils by Dielectrophoresis
Speaker: Jie Tang <tang.jie@nims.go.jp> (1D Nanomaterials Group, National Institute for Materials Science, Japan)

**Poster:** DNA Encapsulated Single-Walled Carbon Nanotubes Formed by DNA Ion Irradiation in Electrolyte Plasmas
Speaker: Rikizo Hatakeyama <hatake@eeci.tohoku.ac.jp>
Authors: Rikizo Hatakeyama, Takeru Okada, Toshiro Kaneko, (Department of Electronic Engineering, Tohoku University, Sendai, Japan)

**Poster:** A simple method for synthesis of carbon nanotubes decorated with size-controllable Fe nanoparticles
Speaker: Wencai Ren <wcrren@imr.ac.cn>
Authors: Qingfeng Liu, Wencai Ren, Hongtao Cong, Hui-Ming Cheng (Institute of Metal Research, Chinese Acadamy of Sciences, Shenyang, China)

**Poster:** Selective Synthesis of Nitrogen Encapsulated Fullerene and Azafullerene Using Plasma-Ion Irradiation Method
Presenter: Toshiro Kaneko <kaneko@eeci.tohoku.ac.jp>
Authors: Toshiro Kaneko, Shigeyuki Abe, Shohei Nishigaki, Hiroyasu Ishida, Rikizo Hatakeyama, (Department of Electronic Engineering, Tohoku University, Sendai, Japan)

**Posters for Track on Top-down Meets Bottom-up 9:25 AM –10:25 AM Saturday, April 21**

**Poster:** A chemist looks at electron-beam lithography: high-resolution patterns to guide self-assembly  
Presenter: Marya Lieberman <mlieberm@nd.edu>  
Authors: Marya Lieberman, Bo Gao, Kyoung Nan Kim, Koshala Sarveswaran  
(Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame IN)

**Posters for Track Self-assembly of Peptide-Protein Nanostructures 9:25 AM –10:25 AM Saturday, April 21**

**Poster:** Tuning Hydrogel Rigidity via Photopolymerization of Self-Assembled Beta-Hairpin Peptides  
Presenter: Ronak Rughani <ronakcvr@udel.edu>,  
Authors: Ronak Rughani, Matthew Lamm, Darrin Pochan, Joel Schneider (University of Delaware, Delaware, Mayland)

**Poster:** Investigation of the impact of structured water on peptide binding at the TiO_2 surface  
Presenter: Adam Skelton <a.a.skelton@warwick.ac.uk>  
Authors: Adam Skelton, Tiffany Walsh (University of Warwick, Warwick, UK)

**Poster:** Molecular Basis for Patterned Supramolecular SelfAssembly of a Genetically Engineered Gold Binding Protein on Au {111}  
Presenter: Christopher So <crso@u.washington.edu>  
Authors: Christopher So, Ersin Emre Oren, John Kulp, Hadi Zareie, Candan Tamerler, John Evans (Materials Science and Engineering, University of Washington, Seattle, WA)

**Poster:** In Silico Design of Inorganic Binding Peptides  
Presenter: Ersin Emre Oren <eeoren@u.washington.edu>  
Authors: Ersin Emre Oren, Ram Samudrala, Deniz Sahin, Marketa Hnilova, Candan Tamerler, Mehmet Sarikaya (Materials Science and Engineering, University of Washington, Seattle, WA)

**Poster:** Biomimetic Regulation of Calcium Phosphate Mineral Morphology Using Combinatorially Selected Hydroxyapatite Heptapeptides  
Presenter: Mustafa Gungormus <musgun@u.washington.edu>  
Authors: Mustafa Gungormus, Hanson Fong, Il Wong Kim, John Spencer, Candan Tamerler, Mehmet Sarikaya (University of Washington, Seattle, WA)

**Poster:** Approaches for the controlled assembly of peptide-QD conjugates  
Presenter: Juan Bautista  
Authors: Juan Bautista (Department of Organic Chemistry, University of Santiago de Compostela, Santiago de Compostela, Spain)
Poster: Nucleophilic Catalysis of Oxime and Hydrazone Reactions by Aniline: Expanding the Scope of Imine Chemistry
Presenter: Anouk Dirksen <dirksen@scripps.edu>
Authors: Anouk Dirksen (The Scripps Research Institute, La Jolla, CA/Cardiovascular Research Institute Maastricht, Maastricht, The Netherlands), Tilman M. Hackeng (Cardiovascular Research Institute Maastricht, Maastricht, The Netherlands), Phil E Dawson (The Scripps Research Institute, La Jolla, CA)

Track on Fullerene Nanostructures, Session B: 10:25 AM - 11:40 AM Saturday, April 21
- **Track Chair:** Jie Liu <j.liu@duke.edu>, Department of Chemistry, Duke University, Durham, NC
- **Duration:** (2 talks) = 3*25 min. = 75 min
- **Location:** Ballroom 1

**Invited Talk:** Determination of the chirality of carbon nanotubes
Speaker: Lu-Chang Qin <lcqin@physics.unc.edu>
Authors: Lu-Chang Qin, Otto Zhou <ozhou@phys.unc.edu>
(Department of Physics, University of North Carolina, Chapel Hill, NC)

**Invited Talk:** (n,m)-Abundance Evaluation and Intermediate Frequency Raman Modes of Single Walled Carbon Nanotubes and their Aggregates
Speaker: Fotios Papadimitrakopoulos <papadim@mail.ims.uconn.edu> (Institute of Materials Science, University of Connecticut. Storrs, CT)

**Contributed Talk:** Temperature and pH-responsive single-walled carbon nanotube dispersions
Speaker: Liwei Chen <chenl1@ohio.edu>
Authors: Dan Wang, Liwei Chen (Department of Chemistry and Biochemistry Ohio University, Athens, OH)

Track on Top-down Meets Bottom-up: 11:40 AM – 12:55 PM Saturday, April 21:
- **Description:** Talks & posters in this track 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 <mlieberm@nd.edu>, Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN
- **Duration:** (1 Keynote Talk + 2 other talks) = 35+2*25 min. = 85 min
- **Location:** Ballroom 1

**Keynote Talk:** Structured Polymer Layers on Solids by Chemical Nanolithography
Invited Talk: Template-Directed Growth of Nanomaterials  
Speaker: Yujie Xiong <yjxiong@u.washington.edu>  
Authors: Yujie Xiong and Younan Xia (Department of Chemistry, University of Washington, Seattle, WA)

Invited Talk: Top-down Meets Bottom-up: Improvement of the Optical Properties of Self-assembled Colloidal Photonic Crystal Films through the Use of Patterned Substrates  
Speaker: Evangellos Vekris <evekris@chem.utoronto.ca>  
Authors: Evangellos Vekris and Geoffrey Ozin (Department of Chemistry, University of Toronto, Toronto, Canada)

Break: 12:55 PM - 1:30 PM Saturday, April 21

Track Self-assembly of Peptide-Protein Nanostructures: 1:30 PM - 4:10 PM Saturday, April 21

Track on Self-assembly of Peptide-Protein Nanostructures
  ▪ Track Chair: Mehmet Sarikaya <sarikaya@u.washington.edu> (Genetically Engineered Materials Science and Engineering Center, Materials Science and Engineering, University of Washington, Seattle, WA)
  ▪ This Track is supported by UW-MRSEC via NSF

Duration: (1 keynote + 5 other talks)= 35+5*25 min. =160 min
Location: Ballroom 1

Keynote Talk: Molecular Engineering by Genetically-Designed Peptides  
Speaker: Candan Tamerler <candan@u.washington.edu> (Molecular Biology and Genetics, Istanbul Technical University, Istanbul, Turkey)  
Authors: Candan Tamerler, John Evans, Ram Samudrala, and Mehmet Sarikaya

Invited Talk: Peptide Dip-Pen Nanolithography and Bioinspired Assembly for Near-Field Nanophotonic Applications  
Speaker: David Ginger <ginger@chem.washington.edu> (Chemistry, University of Washington, Seattle, WA)

Invited Talk: Bio-active Properties of Peptide Hydrogel Surfaces  
Speaker: Joel Schneider <schneijp@udel.edu>  
Authors: Daphne Salick, Juliana Restinger, Darrin Pochan, and Joel Schneider (Department of Chemistry and Biochemistry, Department of Materials Science and Engineering, University of Delaware, Newark, DE)
**Invited Talk:** Computational Engineering of Bionanostructures  
Speaker: Ram Samudrala <ram@compbio.washington.edu>, Microbiology, University of Washington, Seattle, WA)

**Invited Talk:** Adaptive Covalent Chemistry for the Manipulation and Assembly of Complex Macromolecules in Aqueous Solution  
Speaker: Phil E. Dawson <dawson@scripps.edu> (The Scripps Research Institute, La Jolla, CA)  
Authors: Tilman Hackeng (University of Maastricht, The Netherlands), Anouk Dirksen and Philip E. Dawson (Department of Cell Biology and Chemistry, The Scripps Research Institute, La Jolla, CA)

**Invited Talk:** Modelling specificity of peptide-surface interfaces: contrasting behaviour of hydrophobic and hydrophilic cases  
Speaker: Tiff Walsh <t.walsh@warwick.ac.uk>  
Authors: S. de Miranda Tomasio, A. A. Skelton and T. R. Walsh (Department of Chemistry and Centre for Scientific Computing, University of Warwick, Coventry, U.K.)