

- 4:40 PM Stefan Diez*, Cerasela Dinu, Cordula Reuther, Ralf Seidel, Joerg Optiz, Michael Mertig, Wolfgang Pompe, Joe Howard
Manipulating DNA Molecules in Synthetic Environments by Motor Proteins & Microtubules
- 5:00 PM Mahsa Rouhanizadeh*, Tao Tang, Chao Li, Gopikrishnan Soundararajan, Chongwu Zhou, and Tzung K. Hsiai
Applying Indium Oxide Nanowires as Sensitive and Specific Redox Protein Sensors
- 6:30 PM Foresight Institute Feynman Prize Banquet *Junior Ballroom*
- 9:00 PM Student Network Event *Santa Clara Room*
Ralph Merkle roundtable with students

Sunday, October 12

Session 9 James Spencer, Session Chair *Grand Ballroom E*

- 8:00 AM Continental Breakfast
- 9:00 AM Keynote: Feynman Prize Winner (Theory)
- 9:30 AM Keynote: Feynman Prize Winner (Experimental)
- 10:00 AM Luc Jaeger* and Arkadiusz Chworos
How to Play LEGO with RNA: Design of RNA Cellular Automata
- 10:20 AM Yanhong Hu, Susan Sinnott*
Nanometer-Scale Engineering of Composites
- 11:00 AM Break

Session 10 Chris Gorman, Session Chair *Grand Ballroom E*

- 11:20 AM Richard T. Pomerantz*, Michael Anikin, Jordanka Zlatanova, William T. McAllister
RNA Polymerase as an Information-Dependent Molecular Motor
- 11:40 AM Michael D. McGehee*, Kevin M. Coakley, Yuxiang Liu, Chiatzun Goh
Infiltrating Semiconducting Polymers Into Self-Assembled Mesoporous Titania To Make Photovoltaic Cells
- 12:00 PM Jun Huang*, Weixing Lu, Hsian-Rong Tseng, Branden Brough, Amar Flood, Bi-Dan Yu, J. Fraser Stoddart, Chih-Ming Ho
Molecular Shuttle Switching in Closely Packed Langmuir Films
- 12:20 James Spencer—Closing remarks
- 12:30 Box Lunch (for those who purchased lunch plan)

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11th Foresight Conference on Molecular Nanotechnology

October 9-12, 2003

San Francisco Airport Marriott

Conference Co-chairs:

James T. Spencer, Syracuse University

Christopher Gorman, North Carolina State University

Program

Thursday, October 9

- 7:30 AM Tutorial Registration *Junior Ballroom Foyer*
- 10:00 AM Conference Registration opens *Junior Ballroom Foyer*
- 6:00 PM Conference Registration *Registration Counter*
- 6:30 PM Welcome Reception *San Ramon*
- 8:30 PM Registration closes

Tutorial Schedule October 9

- 8:00 AM Continental Breakfast *Junior Ballroom Foyer*
- 9:00 AM Opening Remarks, Hicham Fenniri *Junior Ballroom*
National Institute for Nanotechnology and
The University of Alberta
- 9:15 AM *A Top-Down Look at Bottom Up Electronics*
Mark S. Lundstrom, Purdue University
- 10:15 AM Break/Discussion
- 10:45 AM *Nanostructured Catalysts*
Susannah Scott, University of California at Santa Barbara
- 11:45 AM Lunch (included) *Junior Ballroom Foyer*
- 1:15 PM *Implications of Nanotechnology for Energy and Environmental Remediation*
Thomas E. Mallouk, Pennsylvania State University
- 2:15 PM Break/Discussion
- 2:30 PM *Self-Assembly Approaches to Nanoscale Materials*
Steven C. Zimmerman, University of Illinois at Urbana-Champaign
- 3:30 PM Break/Discussion
- 4:00 PM *An Integrated Systems-Oriented Approach to Molecular Electronics*
Fraser Stoddart, University of California at Los Angeles
- 5:00 PM Discussion
- 5:15 PM Closing Remarks, Hicham Fenniri

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Recording of presentations is not permitted

Friday, October 10

- 7:00 AM Conference Registration *Conference Registration Counter*
8:00 AM Continental Breakfast *Grand Ballroom Foyer*
- Session 1** James Spencer, Session Chair *Grand Ballroom E*
8:50 AM James Spencer, 11th Conference Chair
Welcome and Introduction
9:00 AM Keynote: Fraser Stoddart*
Meccano on the NanoScale: A Blueprint for Making Some of the World's Tiniest Machines
10:10 AM Mark Lundstrom*, Jing Guo
Carbon Nanotube Electronics: Device Physics, Technology, & Applications
10:50 AM Break
- Session 2** Chris Gorman, Session Chair *Grand Ballroom E*
11:10 AM Hicham Fenniri*
Organic Nanotubes with Tunable Dimensions and Properties
11:50 AM D. P. Long*, J. L. Lazorcik, and Ranganathan Shashidhar
Magnetic Entrapment of Carbon Nanotubes for the Fabrication of Electrically Conductive Bridging Structures
12:10 PM Lunch *Junior Ballroom*
Optional Lunch Talks by Corporate Sponsors—see handout
1:30 PM Poster presenters—Please set-up *Ballroom G-J*
- Session 3** Hicham Fenniri, Session Chair *Grand Ballroom E*
1:40 PM Seth Marder* and Joseph W. Perry
Two-Photon Materials Chemistry
2:20 PM Thomas Piok, Stefan Gernerth, Christoph Gadermaier, Franz P. Wenzl, Satish Patil, Rivelino Montenegro, Thomas Kietzke, Ullrich Scherf, Katharina Landfester, Dieter Neher, Emil J.W. List*
Organic Light Emitting Devices Fabricated from Semiconducting Nanospheres
2:40 PM M. Meyyappan*, Jie Han, Jun Li, and Jing Li
Nanostructure Engineered Molecular Electronic Sensors
3:00 PM Simon Dunne*, Lasse Nurkkala, Robert Steen
Molecular Electronic Devices Based on Oligothiophene Architecture
3:20 PM Break
- Session 4** Chris Gorman, Session Chair *Grand Ballroom E*
3:40 PM Marya Lieberman*
Molecular Quantum-dot Cellular Automata: Computation without Current
4:20 PM Alison Chaiken*, Gary Gibson, K. Nauka, C.C. Yang, B.-S. Yeh, R. Bicknell-Tassius, J. Chen, D.D. Lindig, S. Sivaramakrishnan, H. Liao, J. Jasinski, Z. Liliental-Weber
Ultrahigh Density Data Storage Using Epitaxial Phase-Change Media Diodes
4:40 PM Robert A. Kaindl*, Daniel Haegele, Marc A. Camahan, Daniel S. Chemla
Contactless Terahertz Probes of Correlations and Dynamics in Low-Dimensional Electron-hole Gases
5:00 PM Panel: *Venture Capital for Nanotechnology*
Panel Chair: Ed Niehaus.
Panelists: Steve Jurvetson, Alan Marty, Alex Wong, Jim Von Ehr

- 6-9 PM Poster Session & Reception *Grand Ballroom F*
8-9 PM Foresight Institute Public Policy Forum *Grand Ballroom E*
Foresight president Christine Peterson will recap her testimony at the U.S. House Science Committee's hearing on *The Societal Implications of Nanotechnology* with group discussion.

Saturday, October 11

- Session 5** James Spencer, Session Chair *Grand Ballroom E*
8:00 AM Continental Breakfast and Registration
9:00 AM Keynote: Tobin Marks*
Self-Assembly of Nanophotonic Materials and Device Structures
10:00 AM J.G. Lu*, D.W. Wang, C.J. Otten, and W.E. Buhro
Electrical Properties of Boron Nanowires
10:20 AM Xiangfeng Duan*
Semiconductor Nanowires: from Nanoelectronics to Microelectronics
10:40 AM Break
- Session 6** Hicham Fenniri, Session Chair *Grand Ballroom E*
11:00 AM Susannah Scott*
Layer-by-Layer Construction of Metal Oxide and Nitride Thin Films by Non-Hydrolytic Condensation
11:40 AM Jacob Schmidt*
Development of Biomimetic Devices using Membrane Proteins
12:00 PM Nick Shen, Zengtao Liu, Blake Jacquot, Edwin C. Kan*
Integration of Silicon Vascular, Olfactory, and Gustatory Units: Charge-Based Actuation & Sensing
12:20 PM Gopikrishnan Soundararajan*, Mahsa Rouhinzadeh, Hongyu Yu, E.S.Kim, Tzung K. Hsiai
Micro Sensors to Detect Shear Stress on Vascular Cells
12:40 PM Lunch *Junior Ballroom*
1:00 PM **Please remove posters from Poster Room**
- Session 7** Chris Gorman, Session Chair *Grand Ballroom E*
2:00 PM Donald Tomalia*, Douglas Swanson, Baohua Huang
Synthetic Control of Dendritic Nanostructures Both Within and Beyond Poly(amidoamine) Dendrimers
2:40 PM Henrique E. Toma*, Andre L. B. Formiga, Marcelo Nakamura, Herbert Winnischofer, Ana F. Nogueira, K. Araki
Nanostructured Films of Supramolecular Metal-Cluster Porphyrins
3:00 PM Gavin Meredith*, Hayley Wu, Nancy Allbritton
Novel Chemical Strategy to Link Protein to DNA for Directed Molecular Assembly
3:20 PM Larry W. McLaughlin*, Kristen M. Stewart
Synthesis and Self-Assembly of Metal-Centered DNA Lattices
3:40 AM Break
- Session 8** Hicham Fenniri, Session Chair *Grand Ballroom E*
4:00 PM Jan Genzer*
Material templating through substrate-bound molecular and macromolecular gradients