This "virtual" symposium addresses the burgeoning interest in molecular electronics by offering related presentations from nominally disparate fields. Four symposia (C, G, J, P) have incorporated entire sessions concerning molecular electronics into their overall programs, and scheduling was coordinated to enable convenient viewing of any or all of these sessions. Other presentations in which the topic is evident are listed at the end of this program and identified by a # in the associated symposia programs.

SESSION NNI/C1: JOINT SESSION
ARRAYS, ESSAYS AND DIAGNOSTICS - I
Chair: Guenter Schmid
Monday Morning, December 2, 2002
Room 208 (Hyres)

8:30 AM *NNI.1/C1.1
BIODIRECTED SYNTHESIS OF FUNCTIONAL MATERIALS USING NANO SCALE BUILDING BLOCKS. Chad A. Mirkin, Department of Chemistry and Institute for Nanotechnology, Northwestern University, Evanston, IL.

9:00 AM *NNI.2/C1.2
BIO-MATERIALS - NANOPARTICLE HYBRID SYSTEMS FOR BIOELECTRONICS. Ilanit Willner, Institute of Chemistry, The Hebrew University of Jerusalem, Jerusalem, ISRAEL.

9:30 AM NNI.3/C1.3
NANOPARTICLE SURFACES FOR CONTROLLED SELF-ASSEMBLY OF MOLECULES. Federico Rosei, Y. Naitch, M. Schumack, E. Leszczynski, I. Stenmark, and F. Besenbacher, Physics Department and L-NANO, University of Aarhus, DENMARK. P. Jiang, A. Goudinov, C. Jeaich, CEMES-CNRS, Toulouse, FRANCE.

9:45 AM NNI.4/C1.4
CONDUCTANCE MICROSCOPY FOR ELECTRIC CONDUCTION STUDY OF BIOINSPIRED HYBRID NANOSTRUCTURES UNDER AMBIENT CONDITIONS. Saleem Rao, Waiyu Sethyman, Seungbin Hong, Florida State Univ, Dept of Physics, Tallahassee, FL.

10:00 AM BREAK

10:30 AM *NNI.5/C1.5
DNA-MEDIATED ASSEMBLY OF CARBON NANOTUBE DEVICES. Keith A. Williams, Peter Veeman, Cees Dekker, Delft University of Technology, Department of Nanoscience and DIMES, Delft, THE NETHERLANDS.

11:00 AM NNI.6/C1.6
ELECTRONIC DETECTION OF INDICATOR-FREE DNA HYBRIDS BY ELECTRONIC FIELD CONTROL. H.Y. Lee, Y.S. Choi, H. Tanaka, and T. Kawai, The Institute of Scientific and Industrial Research, Osaka University, Osaka, JAPAN.

11:15 AM NNI.7/C1.7
A HIGH PERFORMANCE CELL PATTERNING FOR CELL-BASED SENSOR APPLICATIONS. Mandana Vecht, Miquin Zhang, University of Washington, Dept of Materials Science & Engineering, Seattle, WA.

11:30 AM NNI.8/C1.8
MOLECULAR CASTING WITH DNA-MEMBRANE COMPLEXES. Hongjun Liang*, Thomas E. Angelini, James Ho, Paul Braun*, and Gerard C.L. Wong*,†, University of Illinois at Urbana-Champaign, Urbana, IL, "Department of Materials Science and Engineering; †Department of Physics; ‡Department of Bioengineering.

SESSION NNI/C2: JOINT SESSION
ARRAYS, ESSAYS AND DIAGNOSTICS - II
Chair: Ulrich Simon
Monday Afternoon, December 2, 2002
Room 208 (Hyres)

1:30 PM *NNI.9/C2.1
FABRICATIONS OF PEPTIDE NANOTUBES FUNCTIONALIZED WITH BIOLOGICAL AND MOLECULAR RECOGNITION AND THEIR ASSEMBLIES INTO DEVICE CONFIGURATIONS. Hiroshi Maeda, Yung-Fei Chen, Romain Bijlai, City Univ. of New York, Hunter College, Dept. of Chemistry, New York, NY.

2:00 PM *NNI.10/C2.2
NANOPARTICLE BIOCONSOLIDATE CHEMISTRY: STRENGTHENING BIO-MOLECULES’ GRIP ON GOLD. Sarah Evans, Aimee Erickson, Castro Luiz, Kyle Page, T. Andrew Taton, Department of Chemistry, University of Minnesota, Minneapolis, MN.

2:30 PM NNI.11/C2.3
SELECTIVITY OF POLYPEPTIDES FOR BINDING TO CARBON NANOTUBES. Siqun Wang, Hong Wang, Steve Lustig, Nancy Rizzo, Shekhar Subramoney, Anand Jagota DelPonte, Central Research, Wilmington, DE; Yet Ming Chang, Ellen S. Humphreys, Sing-Yoon Chang, Department of Materials Science & Engineering, Massachusetts Institute of Technology, Cambridge, MA.

2:45 PM NNI.12/C2.4
A NEW PROTEIN-PATTERNING TECHNIQUE AND ITS APPLICATION IN BIO-INSPIRED SELF-ASSEMBLY. Dong Guo, Helen McNally, Purdue University, School of Electrical and Computer Engineering, West Lafayette, IN; Manesh Pingle, Donald Bergstrom, Purdue University, Dept. of Medicinal Chemistry and Molecular Pharmacology, West Lafayette, IN; Rashid Bakhir, Purdue University, School of Electrical and Computer Engineering, West Lafayette, IN.

3:00 PM NNI.13/C2.5
SPECIFIC INTERACTION BETWEEN A PROTEIN AND CARBON NANOTUBES - TOWARDS BIOSENSORS. Carolina Salvador-Morales, Trinity College, Dept of Physics, Dublin, IRELAND; Ed Franklin, Trinity College, Dept of Biochemistry, Dublin, IRELAND; G. Chambers, UCD, School of Physics, Dublin, IRELAND; Antonio Fasencan, Janos Nagy, FUND, Namur, BELGIUM; Werner Blau, Andrew Minett, Marc in het Panhuis, Trinity College, Dept of Physics, Dublin, IRELAND.

3:15 PM BREAK

SESSION NNI/C3: JOINT POSTER SESSION
Monday Evening, December 2, 2002
8:00 PM
Exhibition Hall D (Hyres)

N3.1/C3.1
LOW TEMPERATURE ELECTRONIC TRANSPORT AND LONG RANGE ELECTRON TRANSFER IN MACROMOLECULES. Natalia Zimbalowska, City College of CUNY, Physics Department, New York, NY.

N3.2/C3.6
MOLECULAR DYNAMICS STUDY OF ENERGY TRANSFER THROUGH POLYMERIC MEDIUM. Rajesh Baghawan, Craig Carter, Massachusetts Institute of Technology, Dept of Materials Science and Technology, Cambridge, MA.
SESSION NN4/17: JOINT SESSION
MOLECULAR ELECTRONICS
Chair: David A. LeVan
Tuesday Morning, December 3, 2002
Room 313 (Hynes)

8:30 AM *NN4.1/17.1
REMOTE ELECTRONIC CONTROL OF DNA AND PROTEIN MOLECULAR MACHINES. Joseph Jacobson, Kimberly Harrad Schiffer, John Schwartz, The MIT Media Lab Center for Bits and Atoms; J.P. Shi, and Shuanggu Zhang, The Center for Biomedical Engineering, Massachusetts Institute of Technology, Cambridge, MA.

9:00 AM NN4.2/17.2

9:15 AM NN4.3/17.3
ENERGY TRANSFER AND CONVERSION IN NANOCHELLE COMPOUNDS CONTAINING CONJUGATED CHROMOPHORES. R. Tubino, Dip. Scienze dei Materiali and INFN, Univ. Milano-Bicocca, Milan, ITALY; G. Bongiovanni, A. Mura, Dip. Fisica and INFN, Univ. di Cagliari, Cagliari, ITALY; C. Botta, ISMAC.CNR, Milan, ITALY; G. Di Silvestro, Universita’ di Milano, Milan, ITALY.

9:30 AM NN4.4/17.4

9:45 AM NN4.5/17.5
A STUDY ON DNA ELECTRONICS USING NANOJUNCTIONS. Joon Sang Lee, Yangkyu Choi, Oh Seok-bae, and Luke P. Lee, Berkeley Sensor and Actuator Center, Department of Bioengineering, University of California at Berkeley.

10:00 AM BREAK

SESSION NN5/18: JOINT SESSION
NANOTECHNOLOGY AND MOLECULAR MACHINES - II
Chair: Joseph M. Jacobson
Tuesday Morning, December 3, 2002
Room 313 (Hynes)

10:30 AM *NN5.1/18.1
CHEMICAL ANALYSES AND MOLECULAR RECOGNITION WITH NANOMECHANICAL CANTILEVER ARRAYS. Christoph Gerber, NCCR National Center of Competence for Nanoswiss, Inst. of Physics, Univ. Basel, Nanoscale Science Group, IBM Research Lab, Ruschlikon, SWITZERLAND.

11:00 AM NN5.2/18.2

11:15 AM NN5.3/18.3

11:30 AM NN5.4/18.4
FOCUSED ION BEAM-NANO-MACHINED STRUCTURES FOR STRAIN ANALYSIS BY A MOIRE TECHNIQUE. Bi-Lu Li, Albany NanoTech, Albany, NY; Xin Zhang, Department of Manufacturing Engineering, Boston University, Boston, MA; Haimin Xie, Dept of Eng. Mechanics, Tsinghua University, CHINA.

11:45 AM NN5.5/18.5
PROCESSING TECHNIQUES FOR SINGLE-WALLED CARBON NANOTUBES FOR ELECTRONICS APPLICATIONS. Paul Jaynes, Tom Tiano, Charlie Carey, Margaret Requind, Foster-Miller, Inc., Waldham, MA; Ken McGrath, CNI, Houston, TX.

SESSION N2:
Chairs: Marie-Isabelle Barston, Eric L. Garfunkel, David C. Martin and Stuart S.P. Parkin
Thursday Afternoon, December 3, 2002
Grand Ballroom (Sheraton)

12:05 PM *X2.1
CARBON NANOELECTRONICS. Paul L. McEuen, LASSP, Cornell University, Ithaca, NY.

SESSION NN6/18: JOINT SESSION
NANO AND MOLECULAR ELECTRONICS
Chair: Dawn A. Bonnell
Wednesday Afternoon, December 4, 2002
Room 200 (Hynes)

1:30 PM *NN6.1/G9.1

2:00 PM NN6.2/G9.2
AFM-BASED ELECTRICAL CHARACTERIZATION OF NANOSTRUCTURES. Sandra B. Schugmann, Sujit K. Banerjee, Dept. of Physics, Applied Physics and Astronomy, Robert Vajtai, BingWei Wei, Dept. of Materials Science and Engineering; Leo J. Schwalke, Dept. of Physics, Applied Physics and Astronomy; Pulickel M. Ajayan, Dept. of Materials Science and Engineering, Rensselaer Polytechnic Institute, Troy, NY.

2:15 PM NN6.3/G9.3
INTERFACE EFFECTS ON ELECTRICAL PROPERTIES OF CARBON NANOTUBES. Praludes Munglia, Jeeru Choi, Dept of Electrical and Computer Engineering, Wayne State Univ, Detroit, MI.

2:30 PM NN6.4/G9.4
NEGATIVE DIFFERENTIAL RESISTANCES IN NANOMECHANICAL DOUBLE BARRIER TUNNELLING JUNCTIONS WITH C60 MOLECULES AT ROOM TEMPERATURE. Koshih Nakano*, Yasuo Azuma*, Yutaka Mujina, *”, “Tokyo Institute of Technology, Dept. of Physical Electronics, Organization and Function, PRESTO, Japan Science and Technology Corporation (JST), Tokyo, JAPAN.

2:45 PM NN6.5/G9.5
QUANTUM CONFINEMENT ON THE VIBRATIONAL PROPERTIES OF SILICON NANO WIRES. Dai Duo Ma, Shuitongg Lee, City Univ of Hong Kong, Dept of Physics and Materials Science, Hong Kong, CHINA.

3:00 PM BREAK

3:30 PM NN6.6/G9.6
PERIODIC ARRAYS OF INTRAMOLECULAR JUNSTIONS OF SILICON NANOWIRES. Xiaojuan Ma, Shuitongg Lee, City Univ of Hong Kong, Dept of Physics and Materials Science, Hong Kong, CHINA.

3:45 PM NN6.7/G9.7
SINGLE MOLECULE SWITCHES. Z.J. Dechoum, P.S. Weiss, The Pennsylvania State University, University Park, PA.
TRIPLE-PROBE ATOMIC FORCE MICROSCOPE: MEASURING A CARBON NANOTUBE/DNA MIS-FIT. Ken Shimotani, Hiroaki Watanabe, Toshi Shigematsu, Chikara Masabe, Mamako Shimizu, Advanced Research Lab., Corporate Research Center, Fuji Xerox Co., Ltd., Kanagawa, JAPAN.

9:45 AM N88/4/G14.4
TEXTURE-CONTROLLED ELECTROCHEMICAL GROWTH AND CHARACTERIZATION OF METALLIC NANOWIRES. Mingliang Tian, Jinguo Wang, James Kurth, Thomas E. Mallouk, and Moses HE. Cisco, Penn State Univ. Center for Collective Phenomena in Restricted Geometries, and the Materials Research Institute, University Park, PA.

9:30 AM N88.5/G14.5
DYNAMICAL EVOLUTION OF GOLD NANOWIRE FORMATION. Pablo Z. Coura, Severino de O. Dutra, Univ. Fed. de Juiz de Fora, Departamento de Fisica, Juiz de Fora, BRAZIL; Douglas S. Galvao, UNICAMP, Instituto de Fisica Gleb Wataghin, Campinas, BRAZIL; Varki Rodrigues, Daniel Ugarte, Laboratorio Nacional de Luz Sintetron, Campinas, BRAZIL.

9:45 AM N88.6/G14.6
THE ROLE OF CARBON CONTAMINATION IN SUSPENDED GOLD NANOWIRES. Sergio B. Legrom, Douglas S. Galvao, Applied Physics Department, State University of Campinas, Campinas, SP, BRAZIL; Varki Rodrigues, Daniel Ugarte, Laboratorio Nacional de Luz Sintetron, Campinas, SP, BRAZIL.

10:00 AM BREA

10:30 AM N88.7/G14.7
FIELD EMISION FROM PEAPODS [FULL SINGLE WALL CARBON NANOTUBE SYSTEMS]. Richard M. Rosca, Siddhartha Kar, Christine Sung, David E. Luzzi, Dept. of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA.

10:45 AM N88.8/G14.8

Some other presentations that pertain to molecular electronics are:

B3.7 PATTERNED DEPOSITION FROM LIQUID CARBON DIOXIDE. Christine K. Lascombe, Wilhelm T.S. Huck, A.B. Holmes

B4.2 ENERGY LEVEL ALIGNMENT AT INTERFACES WITH ORGANIC MATERIALS: NEW DATA, BETTER UNDERSTANDING. Antoine Kahn

B5.4 FORMATION OF SINGLE-WALL CARBON NANOTUBES FOREST ASSEMBLIES ON METAL SURFACES. Fotis Papadimitrioupolos

B6.8 MOLECULAR AND INTERFACE "ENGINEERING" OF CURRENT TRANSPORT THROUGH SINGLE MOLECULES: A MICROSCOPIC STUDY. Yongjiang Xue

B6.9 SCANNING PROBE STUDIES OF ORGANIC SELF-ASSEMBLED MONOLAYERS (SAMs). Weirong Jiang

B7.8 ESTABLISHING RELIABLE ELECTRICAL CONTACT TO MOLECULES BY NANOTRANSFER PRINTING. Yaoli-Lin Loo

B9.28 ELECTRONIC STRUCTURE OF MOLECULES RELEVANT TO MOLECULAR ELECTRONIC DEVICES. Nikita Mysagin

B9.63 CORRELATING SUBSTITUTANT PARAMETERS TO PROPERTIES DESIRABLE FOR THE FABRICATION OF MOLECULAR ELECTRONIC DEVICES. Natalie Carroll

B9.64 VIBRATIONAL MICROSCOPY/SPECTROSCOPY AND STM MANIPULATION OF SINGLE SEXI-PHENYL MOLECULES. Sin-Wai Hla

C4.1 BIO-ASSEMBLY OF NANOSCALE MATERIALS FOR NANOELECTRONICS. Ming Zheng
C8.4 Jim Heath

C9.3 ASSEMBLY OF GOLD NANOPARTICLES ON DNA STRANDS. Michael Noyong

C10.2 THEORETICAL STUDY OF ELECTRON TRANSPORT THROUGH METALLIC NANOPARTICLES. Yongqiang Xie

C11.17 ELECTRIC FIELD AND CHARGED MOLECULES MEDIATED SELF ASSEMBLY FOR ELECTRONIC DEVICES. S.W. Lee

D4.4 ELECTROCHROMIC MATERIALS AND DEVICES FROM LAYER-BY-LAYER ASSEMBLED POLYMER FILMS. Dean DeLongchamp

D4.6 A NEW FLEXIBLE STRUCTURE FOR OFETS. Annalisa Bonfilio

D4.7 ORGANIC TRANSISTOR SENSORS AND MEMORY ELEMENTS FABRICATED VIA SOLUTION DEPOSITION. H.E. Katz

D4.10 ELECTRONIC SYSTEMS BASED ON ELECTROCHEMICAL TRANSISTORS MADE ON PLASTIC FOILS AND FINE PAPER. Magnus Berggren

F4.6 COVALENT LINKING AND HYBRIDIZATION OF DNA AT SINGLE-WALLED CARBON NANOTUBES. Robert J. Hamers

F4.8 CHARACTERIZATION OF SELF-ASSEMBLED MONOLAYERS ON SILICON FOR MEMORY APPLICATIONS. Qilong Li

F4.10 NANO SCALE PATTERNING OF ORGANIC AND INORGANIC STRUCTURES ON SILICON SURFACES. Jillian M. Barak

F5.4 NANO SCALE ORGANIC ELECTRONIC DEVICES FORMED BY PRINTING AND LAMINATION. John A. Rogers

F5.6 CATHODIC ELECTROGRAFTING NANOLITHOGRAPHY OF TERMINAL ALKynes ON SEMICONDUCTOR SURFACES. Patrick T. Hurley

F6.5 INTENTIONAL P-TYPE DOPING OF SILICON NANOWIRES USING TRIMETHYLSILANOL BY TEMPLATE-DIRECTED VAPOR- LIQUID-SOLID GROWTH. Kale-Keeong Lew

F6.6 SEMICONDUCTOR NANOWIRES — SYNTHESIS, CHARACTERIZATION, AND NOVEL PROPERTIES. K.T. Lee

F7.1 MRS MEDAL AWARD TALK PRESENTATION NANOWIRES AS BUILDING BLOCKS FOR NANO SCALE SCIENCE AND TECHNOLOGY — BUILDING A BIG FUTURE FROM SMALL THINGS. Charles M. Lieber

F7.6 ELEMENTAL SEMICONDUCTOR SUPERLATTICE NANOWIRES. Peidong Yang

G4.1 MEASURING AND CONTROLLING NANOMETER-SCALE PROPERTIES IN MOLECULES AND ASSEMBLIES. P.S. Weiss

G7.30 LOCALIZED CROSS SECTIONING OF CARBON NANOTUBE TO METAL JUNCTIONS FOR HIGH SPATIAL RESOLUTION CHEMICAL AND STRUCTURAL ANALYSIS. K. Dovidenko

G7.32 A COMPARISON OF SCANNING IMPEDANCE AND SCANNING GATE MICROSCOPES FOR DETERMINING PROPERTIES OF INDIVIDUAL DEFECTS IN MOLECULAR CIRCUITS. Sergei V. Kalinin

G7.33 ORGANIC MOLECULES ACTING AS NAMOMOLDS ON Cux[110]. Federico Rosei

G8.11 INFLUENCE OF SUBSTRATE ON IN-PLANE ELECTRICAL CONDUCTION OF CuPc NANO CRYSTALS. Masakazu Nakamura

G11.2 MORPHOLOGY AND POLAR ORDER IN SELF-ASSEMBLED THIN FILMS OF OVERCROWDED ARENES STUDIED BY SCANNING PROBE MICROSCOPY. Thuc-Quyen Nguyen

G11.3 SCANNING PROBE MICROSCOPY OF SELF-ASSEMBLED MONOLAYERS OF PHENYLENE/ETHYNYLENE MOLECULES. R. Ross Getty

G11.4 SURFACE POTENTIAL IMAGING MECHANISMS OF SELF-ASSEMBLED MONOLAYERS. Tony Alvarez

J2.2 NANOPATTERNED SURFACES FOR CONTROLLED GROWTH OF MOLECULAR NANO STRUCTURES. Federico Rosei

V5.3 DIELECTRIC INTERFACE FORMATION IN ORGANIC SEMICONDUCTOR BASED ELECTRONICS. Neil J. Watkins