SYMPOSIUM C

Bio-Inspired Nanoscale Hybrid Systems
December 2 - 4, 2002

Chairs
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Ulrich Simon
Stephan J. Stranick
Steven M. Arriyo
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11:15 AM C1.7/N1.7
A HIGH PERFORMANCE CELL PATTERNING FOR
CELL-BASED SENSOR APPLICATIONS. Makantha Weerakode, Miquin
Zhang, University of Washington, Dept of Materials Science &
Engineering, Seattle, WA.

11:30 AM C1.8/N1.8
MOLECULAR CASTING WITH DNA-MEMBRANE COMPLEXES.
Hongjun Liang*, Thomas E. Angellini, C. 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 C2/N2.2: JOINT SESSION
ARRAYS, ESSAYS AND DIAGNOSTICS - II
Chair: Ulrich Simon
Monday Afternoon, December 2, 2002
Room 208 (Hynes)

1:30 PM *C2.1/N2.1
FABRICATIONS OF PEPTIDE NANOTUBES FUNCTIONALIZED
WITH BIOLOGICAL AND MOLECULAR RECOGNITIONS AND
THEIR ASSEMBLIES INTO DEVICE CONFIGURATIONS.
Hiroshi Matsu, Yung-lou Chen, Ramin Djahlali, City Univ. of New
York, Hunter College, Dept. of Chemistry, New York, NY.

2:00 PM *C2.2/N2.2
NANOPARTICLE BIOCONJUGATE CHEMISTRY:
STRENGTHENING BIOMOLECULES' GRIP ON GOLD. Sarah
Evans, Aimee Erickson, Castro Lacuer, Kyle Page, T. Andrew Taton,
Department of Chemistry, University of Minnesota, Minneapolis, MN.

2:30 PM C2.3/N2.3
SELECTIVITY OF POLYPEPTIDES FOR BINDING TO CARBON
NANOTUBES. Siqun Wang, Hong Wang, Steve Lustig, Nancy Rizzo,
Shekhar Subramoney, Anand Jagota DuPont, Central Research,
Wilmington, DE, Ye-Ming Chang, Ellen S. Huang, Sung-Yoon
Chung, Department of Materials Science & Engineering,
Massachusetts Institute of Technology, Cambridge, MA.

2:45 PM C2.4/N2.4
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; Maneesh 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 C2.5/N2.5
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, DIT, School of Physics, Dublin,
IRELAND; Antonio Faneca, James Nagy, FUNDAP, Namur,
BELGIUM; Werner Blau, Andrew Minett, Marc in het Panhuis,
Trinity College, Dept of Physics, Dublin, IRELAND.

3:15 PM BREAK

SESSION C3: ARRAYS, ESSAYS AND
DIAGNOSTICS - III
Chair: Ulrich Simon
Monday Afternoon, December 2, 2002
Room 208 (Hynes)

3:30 PM C3.1
HIGH DENSITY MAGNETIC RECORDING ON PROTEIN-
DERIVED NANOPARTICLES. J. Hoiville, A. Beecroft, D. Gleeson,
R. Jones, O. Kravyukh, A. Nartowski, E. Warne, J. Wiggins, and
K.W. W. Wong, and E. Hayes, NanoMagnetics Ltd., Bristol, UNITED
KINGDOM.

3:45 PM C3.2
PEPTIDE-MEDIATED SYNTHESIS OF MAGNETIC MATERIALS.
Brian D. Reiss, Chaumin Mao, Amy Aggarwal, Daniel J. Schis,
Angel M. Becker, Center for Nano-, and Molecular Science,
University of Texas at Austin, Austin, TX.
4:00 PM C3.3
SUPERPARAMAGNETIC NANOPARTICLES FOR IMAGING.
Nathan Kohleg, Yong Zhang, Minqin Zhang, University of Washington,
Dept of Materials Science, Seattle, WA.

4:15 PM C3.4
HOTEMPLATE-DIRECTED 2-DIMENSIONAL NANOSTRUCTURE ASSEMBLY.
Seungju M. Yu, Xiao M., Johns Hopkins University, Dept of Materials Science and Engineering, Baltimore,
MD, Mark P. Krebs, Illinois State University, Dept of Biological Sciences, Normal, IL.

4:30 PM C3.5
FABRICATION AND APPLICATION OF PROTEIN CRYSTAL MICROARRAYS 1: DEMONSTRATION OF LASER MANIPULATION AND PATTERNING OF PROTEIN CRYSTAL.
Yoshitaka Hasegawa, Satoshi Masumura, Chie Matsubara, Hiroshi Masuhara, Osaka Univ, Dept of Applied Physics, Frontier Research Center, and Venture Business Laboratory, Osaka, JAPAN; Keiko Ikeda, Protein Crystal Corp, Osaka, JAPAN; Ai Shimokoh, Kyoto Inst of Tech, Dept of Applied Biology, Kyoto, JAPAN; Hajime Mori, Protein Crystal Corp, Kyoto Inst of Tech, Dept of Applied Biology, Kyoto, JAPAN.

4:45 PM C3.6
FABRICATION AND IMAGING OF PROTEIN CROSSOVER STRUCTURES, J.B. LaGriff, Y.-P. Zhao, D.J. Graber, D. Rainville, G.-C. Wang, T.-M. Liu, P. Szewczak, W. Shan, J.N. Turner; "Department of Chemistry, Hamilton College, Clinton, NY; Department of Physics, Applied Physics and Astronomy, Rensselaer Polytechnic Institute, Troy, NY; "Wadsworth Center, Albany, NY;
"Department of Physics, Siena College, Loudonville, NY.

SESSION C4: ARRAYS, ESSAYS AND DIAGNOSTICS - IV
Chair: Stephen J. Straniak
Tuesday, December 3, 2002
Room 208 (Hynes)

8:30 AM *C4.1
BIO-ASSEMBLY OF NANOSCALE MATERIALS FOR NANOELECTRONICS. Ming Zheng, DuPont Central Research & Development, Wilmington, DE.

9:00 AM C4.2
PATTERMED POLYMER COMPOSITE MICROSTRUCTURES FOR BIOLOGICAL APPLICATIONS. Haiyong Zheng, Michael C. Berg, Michael F. Rubner, and Paula T. Hammond, Department of Chemical Engineering and Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA.

9:15 AM C4.3
ARRYING OF INDIVIDUAL CELLS USING DIELECTROPHORESIS. Darren S. Gray and Christopher S. Chen, Dept of Biomedical Engineering, Johns Hopkins University, Baltimore, MD.

9:30 AM C4.4
NANOARCHITECTURED ARRAYS OF ARTIFICIAL SYNAPSES FOR CONTROL OF T-CELL ACTIVATION. Junseok Dooh and Darrell J. Irvine, Massachusetts Institute of Technology, Dept of Materials Science & Engineering/Biological Engineering Division, Cambridge, MA.

9:45 AM C4.5
PROTEIN/POLYMER HYBRIDS AS BIOMIMETIC VALVES. Jacob Schmidt, Dean Ho, Carlo Montemagno, UCLA, Dept of Bioengineering, Los Angeles, CA.

10:00 AM BREAK

SESSION C5: MINERALISATION, IMPLANTS AND SURFACES - I
Chair: Stephen J. Straniak
Tuesday, December 3, 2002
Room 208 (Hynes)

10:30 AM *C5.1
SIMULATION AND PREDICTION OF NEW MATERIAL PROPERTIES AND BIOLOGICAL REACTIVITY BY MOLECULAR MODELLING OF THE INTERACTION OF BIOPOLYMERS WITH SOLID SURFACES. Hubert Kuhn, Maria Lein, University of Essen, Dept Physical Chemistry, Essen, GERMANY.

11:00 AM C5.2
NANO-SIZED SCAFFOLDING ARCHITECTURE ENHANCES PROTEIN ADSORPTION AND CELL ATTACHMENT. Kyung Mi Woo, Victor J. Chen, Peter X. Ma, Department of Biologic and Materials Sciences, University of Michigan, Ann Arbor, MI.

11:15 AM C5.3
CONTROL OF CELL ADHESION ON MICROPATTERNED WAVY POLYELECTROLYTE MULTILAYERS. Michael C. Berg, MIT, Dept of Chemical Engineering, Cambridge, MA; Sung Yun Yang, Jon D. Mendelsohn, MIT, Dept of Materials Science and Engineering, Cambridge, MA; Paula T. Hammond, MIT, Dept of Chemical Engineering, Cambridge, MA; Michael F. Rubner, MIT, Dept of Materials Science and Engineering, Cambridge, MA.

11:30 AM C5.4

11:45 AM C5.5
PROCESSED MICRO AND NANO-COMPOSITES OF HYDROXAPATITE AND POLY(LACTIC ACID). Rodney Peele, Antonie Schmier, Polymer Program, Dept of Chemical Engineering, Institute of Materials Science, Univ of Connecticut, Storrs, CT; Mei Wei, Dept of Metallurgy and Materials Engineering, Institute of Materials Science, Univ of Connecticut, Storrs, CT; Montgomery Shaw, Polymer Program, Dept of Chemical Engineering, Institute of Materials Science, Univ of Connecticut, Storrs, CT.

SESSION C6: MINERALISATION, IMPLANTS AND SURFACES - II
Chair: Seunghoong Hong
Tuesday, December 3, 2002
Room 208 (Hynes)

1:30 PM *C6.1
NANO-STRUCTURING OF SURFACES USING ANODIC ALUMINA MEMBRANES — METHODS, MATERIALS AND PROPERTIES. Thomas Sawicki, ACoVe Surfaces GmbH, Gladbeck, GERMANY.

2:00 PM C6.2
NANO-STRUCTURED AND AUTO-REGENERATING HYBRID INORGANIC/POLYMER COATINGS FOR A DURABLE SELF-CLEAN EFFECT IN OPTICAL QUALITY. K. Rehrs, O. Stichelmadt, P. Cawaliero, R. Chessen, SuNyx Surface Nanotechnologies GmbH, Cologne, GERMANY; A. Deparre, Fraunhofer-Institut Angewandte Optik und Feinmechanik 10F, Jena, GERMANY.

2:15 PM C6.3
SYNTHESIS OF NOVEL ORGANO SILICATE NANOPARTICLES AND THEIR EFFECTS ON OSTEOBLAST BEHAVIOR. Sumi Moungul and Jackie Y. Ying, Massachusetts Institute of Technology, Department of Chemical Engineering, Cambridge, MA.

2:30 PM C6.4
NANO-PARTICULATE HYDROXAPATITE ENHANCES THE BIOACTIVITY OF A RESORBABLE BONE GRAFT. SUBSTITUTE. Stephen A. Doherty, Donald D. Bile, Donald L. Wise, Deborah J. Tranum, Cambridge Scientific, Inc., Cambridge, MA; Ka-Uwe Levan, Massachusetts General Hospital, Orthopedics Research Laboratory, Boston, MA; Jackie Y. Ying, Massachusetts Institute of Technology, Department of Chemical Engineering, Cambridge, MA; Stephen T. Soni, Harvard School of Dental Medicine, Dept of Oral Medicine and Diagnostic Sciences, Boston, MA.

2:45 PM C6.5
BIOMIMETIC POLY(LACTIC ACID) SCAFFOLDS WITH INTERCONNECTED MACROPORES, COLLAGEN-LIKE NANO-SCALE FIBERS, AND BONE-LIKE APATITE. Victor J. Chen, Peter X. Ma, University of Michigan, Dept of Biomedical Engineering, Biologic and Materials Sciences, and Macromolecular Science and Engineering Center, Ann Arbor, MI.

3:00 PM BREAK
**SESSION C9: PARTICLES - I**

Chair: Dieter Fenske

**Wednesday Morning, December 4, 2002**

**Room 208 (Hynes)**

**10:30 AM C9.1**

**BIOPHYSICAL APPLICATIONS OF NANOCRYSTALS.**

Paul Alivisatos, Univ. of Calif., Dept. of Chemistry, Berkeley, CA and Lawrence Berkeley National Lab, Berkeley, CA.

**11:00 AM C9.2**

**DIAGNOSTIC DETECTION SYSTEMS BASED ON GOLD NANOPARTICLE PROBES.**

James Storhoff, Sudhakar Marla, Vibhavdoot Gharadia, Uwe Muller, Tim Patno, Chris Khoury, Nanoarch Inc., Northbrook, IL.

**11:30 AM C9.3**

**ODERING OF QUANTUM DOTS USING GENETICALLY ENGINEERED VIRUSES.**

Swang-Wen Lee, Chaoimin Mao, Christine E. Flynn, and Angela M. Belcher, Department of Chemistry and Biochemistry, University of Texas at Austin, Austin, TX.

**11:45 AM C9.4**

**ASSEMBLY OF GOLD NANOPARTICLES ON DNA STRANDS.**

Michael Noyong, Kirsten Gaedléck, Ulrich Simon, RWTH Aachen, Institute of Inorganic Chemistry, Germany, Germany.

**SESSION C10 PARTICLES - II**

Chair: Steven M. Arrio

**Wednesday Afternoon, December 4, 2002**

**Room 208 (Hynes)**

**1:30 PM C10.1**

**STRUCTURAL, THERMODYNAMIC AND OPTICAL PROPERTIES OF DNA-LINKED METAL NANOPARTICLE AGGREGATES AND ARRAYS: THEORETICAL STUDIES.**

George C. Schatz, Hsiu Ling, Lin Lin Zhou and K. Lance Kelly, Northwestern Univ., Evanston, IL.

**2:00 PM C10.2**

**TEORITICAL STUDY OF ELECTRON TRANSPORT THROUGH METALLIC NANOPARTICLES.**

Yonggang Xue, Mark A. Rutner, Northwestern University, Department of Chemistry and Materials Research Center, Evanston, IL.

**2:15 PM C10.3**

**FLUORESCENCE QUENCHING OF DYE MOLECULES NEAR GOLD NANOPARTICLES: RADIATIVE AND NON-RADIATIVE EFFECTS.**


**2:30 PM C10.4**

**SYNTHESIS OF COBALT NANOPEARL PARTICLES, NANOBOIDS AND NANOWIRES ASSISTED BY OLEIC ACID AND OLEYLAMINE.**

Based Mixtures in 2D and 3D Organization.

Frederic Damace, Philippe Remy, and Digital DNA Labs, Semiconductor Products Sector, Motorola, Toulouse, France.

**3:00 PM BREAK**

**3:15 PM C10.5**

**TEMPERATURE PROGRAMMED ASSEMBLY OF METAL NANOPARTICLES.**

Glenn P. Goodrich, Mahnaz El-Kouchi, Christine D. Kent, The Pennsylvania State University, Depart of Chemistry, University Park, PA.

**4:00 PM C10.6**

**HUMAN SPERMATOZOA ON NANOSTRUCTURED Ag DEPOSITED ON GaAs SURFACE.**

Lucia G. Mangione, Consiglio Nazionale delle Ricerche, CNR Institute for Nanomaterials, ISMM Area della Ricerca di Roma 1, Roma, Italy.

**4:15 PM C10.7**

**COLLOIDAL DNA FROM MORPHOLOGICAL DIVERSITY TO PROGRAMMABLE SELF-ASSEMBLY.**

Alioei V. Tcherkesov, Department of Chemistry, University of Michigan, Ann Arbor, MI.

**4:45 PM C10.8**

**ENZYMES CONTAINING CARBON NANOTUBES FOR BIOCATALYTIC NANOMATERIALS.**

Dng-Yun Kim, Sundeep S. Kargyari, Ravi S. Kunc, Jonathan S. Dordick, Rensselaer Polytechnic Institute, Department of Chemical Engineering, Troy, NY; Nirasapa Chakrapani, Pulickel Ajayan, Rensselaer Polytechnic Institute, Department of Materials Science and Engineering, Troy, NY.
C11.1 CONTROLLABLE FORMATION OF VIRAL ARRAYS USING DNA. Erin Struble, a, b John E. Johnson, c M.G. Finn, d The Scripps Research Institute, a Department of Molecular Biology, b Department of Chemistry, La Jolla, CA.

C11.2 SCALABLE PRODUCTION OF NANOPARTICLES WITHIN PROTEIN TEMPLATES. R. Jones, D. Gleeson, A. Nartwati, B. Warne, K.K.W. Wong, and E. Meyers, NanoMagNetics Ltd, Bristol, UNITED KINGDOM.

C11.3 INTERACTIONS BETWEEN MAGNETIC NANOPARTICLES AND BIOLOGICAL CELLS: AN X-RAY SCATTERING STUDY. I. Koh, B. Cipriano, D. Williams, S. Ehrman, T. Pullman-Holoman and L.J. Martinez-Miranda, Dept of Chemical Eng. and Dept of Materials and Nuclear Eng., University of Maryland, College Park, MD; S. Majetich, Dept. of Physics, Carnegie Mellon University, Pittsburgh, PA; G. Majetich, Dept. of Chemistry, University of Georgia, Athens, GA.

C11.4 BIOMIMICRY IN STU POLYMER HYDROXYAPATITE NANOCOMPOSITES FOR BONE REPLACEMENT. Kalpana Katti, Praveen Kumar Gajjala, Phanikumar Tarbagati, Department of Civil Engineering, North Dakota State University, Fargo, ND.

C11.5 CONTROL OF INORGANIC MORPHOLOGIES BY ORGANIC TEMPLATES. Dorothy Duffy, John Harding, University College London, Dept of Physics and Astronomy, London, UNITED KINGDOM.

C11.6 AQUEOUS TWO PHASE SYSTEMS AS A TOOL FOR NANOASSEMBLY. Muheneh El-Kosoudi, Glenn P. Goodrich, Ian M. Dillehon, Mark R. Elertson, Brian T. Heis, Christine D. Keating, Pennsylvania State University, University Park, PA.

C11.7 NANOSTRUCTURED COMPOSITES AS CARTILAGE TISSUE ENGINEERING MATERIALS. Thomas J. Webster, Purdue University, Dept of Biomedical Engineering, West Lafayette, IN.

C11.8 ELECTRO-ACTIVATED THIOLDISULFIDE EXCHANGE REACTION FOR SITE SPECIFIC IMMOBILIZATION OF BIOMOLECULES. Elisabeth Paolucci, Seen Oscarcas, Center for Surface Biotechnology, Uppsala University, Uppsala, SWEDEN and Dept. of Chemical Engineering, Midhills University, Eskilstuna, SWEDEN; Arjan Quast, Center for Surface Biotechnology, Uppsala University, Uppsala, SWEDEN; Ulfik Gelius, Dept. of Physics, Uppsala University, Uppsala, SWEDEN.

C11.9 SCALE-UP STUDIES FOR THE UNRAVELING OF COLLAGEN BUNDLES. Mary Ann Seltzer, Joseph Malhe, Gennaro Malini, Department of Chemical Engineering, Widener University, Chester, PA.

C11.10 DEVELOPMENT OF RADIOACTIVE DENDRIMER NANOCOMPOSITE DEVICES FOR IMAGING AND RADIOTHERAPY OF TUMORS. L. Babich, A.C. Cook, Shraddha Negawar, and M.K. Khan, University of Michigan, Ann Arbor, MI.

C11.11 ENGINEERED FILMS OF BOMBYX MORI SILK WITH POLY(ETHYLENE OXIDE). Hyojong Juan Jin, Jeonghyung Park, David L. Kaghan, Tufts University, Department of Chemical & Biological Engineering, Bioengineering Center, Medford, MA; Peggy Cebel, Tufts University, Department of Physics and Astronomy, Medford, MA.

C11.12 HUMAN BONE MARROW STEM CELL RESPONSES ON ELECTROSPUN BOMBYX MORI SILK FIBRIN. Hyoung-Joon Jin, Jingxing Chen, Vassilis Karagiorgos, Gregory H. Altman, David L. Kaghan, Tufts University, Department of Chemical & Biological Engineering, Bioengineering Center, Medford, MA.

C11.13 ABSTRACT WITHDRAWN

C11.14 ABSTRACT WITHDRAWN

C11.15 VIRUS-DERIVED ARCHITECTURAL LATTICEWORK NANOCOMPONENTS. Edward Goldberg, Tufts University, Department of Molecular Biology and Microbiology, Boston, MA; Paul Hyman, NanoFrames LLC, Boston, MA; Regina Valzoni, Tufts University, Department of Chemical and Biological Engineering / Bioengineering Center, Medford, MA.

C11.16 ABSTRACT WITHDRAWN

C11.17 ELECTRIC FIELD AND CHARGED MOLECULES MEDIATED SELF-ASSEMBLY FOR ELECTRONIC DEVICES. S.W. Lee, H. Mcnally, R. Bashir, Purdue Univ., School of Electrical and Computer Engineering, West Lafayette, IN; M. Pingle, D. Bergstrom, Purdue Univ. Department of Medicinal Chemistry, West Lafayette, IN.

C11.18 COMPARISON WITH AMINO GROUP AND HYDROPHILIC GROUP FOR PROTEIN AFFINITY BY EXCIMER LASER INDUCED FUNCTIONAL GROUPS SUBSTITUTION ONTO PET FILM. Hiroshi Osumi, Masato Nakagawa, Hirooki Fukuda and Masatoshi Murakami, Department of Electrical Engineering, Tokai Univ, Hiratsuka, Kanagawa, JAPAN; "Mizu Clinic, Edogawa, Tokyo, JAPAN; "Saneioki Hiratsuka Hospital, Hiratsuka, Kanagawa, JAPAN.

C11.19 STABILIZATION OF GOLD NANOCRYSTALS BY ORGANIC DENDRIGN LIGANDS. J. Jack Li, Y. Andrew Wang, Xuanpeng Peng, Univ of Arkansas, Fayetteville, AR.

C11.20 PREPARATION AND CHARACTERIZATION OF MESOPOROUS STRUCTURED POROUS SILICA FILMS WITH CLOSED CELLS. Kui Yu, National Research Council Canada, Sacaton Institute for Molecular Sciences, Ottawa, CANADA; C. Jeffrey Brinker, Sandia National Laboratories, Albuquerque, NM; Bernd Smarsly, Univ. of New Mexico, Center for Micro-Engineered Materials, Albuquerque, NM.


C11.22 FRACTURE AND FATIGUE BEHAVIOR OF A SELF-HEALING POLYMER COMPOSITE. Eric N. Brown, Nancy R. Sottos, Dept. of Theoretical & Applied Mechanics, Urbana, IL; Scott R. White, Dept of Aerospace Engineering, Urbana, IL; Jeffrey S. Moore, Dept of Chemistry, Urbana, IL. "authors affiliated with the Beckman Institute for Advanced Science and Technology, Urbana, IL.

C11.23 MOLECULAR WEIGHT DEPENDENCE OF POLYMERSOME MEMBRANE STRUCTURE, ELASTICITY, AND STABILITY. Harry Hernandez, Aaron K. Brown, Frank S. Bates, Daniel A. Hommer, Dennis E. Discher, "School of Engineering and Applied Science, University of Pennsylvania, Philadelphia, PA; Dept. of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN.

C11.24 MECHANICS OF PROTEIN ASSEMBLIES IN BACTERIOPHAGE T4. Wayne M. Falk and Richard D. James, Dept of Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis, MN.

C11.25 ORGANIC/INORGANIC HYBRID NANO- AND MICRO-
C11.28 SCAFFOLDING FOR THE RE-GROWTH OF BONE TISSUE DEVELOPED FROM A HYDROXYAPATITE/POLYCAPROLACTONE COMPOSITE. S. Induru, A. Cragnolino, R. Joshi, J. Tessier, B. Kung, S. Farbodshenas, C. Sung. Department of Chemical and Nuclear Engineering, Center for Advanced Materials, University of Massachusetts Lowell, Lowell, MA; Department of Materials Science and Engineering, University of Massachusetts Lowell, Lowell, MA; Department of Clinical Science, University of Massachusetts Lowell, Lowell, MA; Department of Mechanical Engineering, University of Massachusetts Lowell, Lowell, MA.

C11.30 PATTERNING CELLS USING THE HBONDED POLY-ELECTROLYTE MULTILAYER TEMPLATE. Sang Yoon Yang, Michael P. Rohner, Massachusetts Institute of Technology, Dept. of Materials Science and Engineering, Cambridge, MA.


C11.32 CONTROLLED TAILORING OF DNA CHAIN LENGTH THROUGH DNA/LDH NANOHYBRID SYSTEM Joo-Min Oh, Seo-Young Kwak, Jin-Ho Cho. Seoul National University, Seoul, Korea; University of Illinois, Urbana, IL.


C11.34 "STICKY" POLYMERS: ACTIVATED POLYPHENYLENE ETHYNYLENES FOR BIOCONJUGATION AND SURFACE FUNCTIONALIZATION. Jordann H. Wozniak, Timothy M. Swager, Massachusetts Inst of Technology, Dept of Chemistry, Cambridge, MA.

C11.35 A MODEL BIOSENSOR USING THE AVIDIN-BIOTIN SYSTEM AND SELF-AMPLIFYING CONJUGATED POLYMERS. Juan Zheng, Timothy M. Swager, Massachusetts Institute of Technology, Dept of Chemistry, Cambridge, MA.

C11.36 NOVEL PROPERTIES OF CARBON NANOTUBES FUNCTIONALIZED BY METAL COMPLEXES. Andrew Minett, Sakina Benrezak, Manuel Ruether, Dept. of Physics, Trinity College Dublin, Dublin, IRELAND; Fiona Prehill, Johannes Vos, National Centre for Sensor Research, Dublin City University, Dublin, IRELAND; Marc van het Phuis, Functional Materiak Group, Dept. of Physics, Trinity College Dublin, Dublin, IRELAND.

C11.37 STRUCTURE AND PROPERTIES OF POLY[α-HYDROXY ACIDS]/Nano HYDROXYAPATITE COMPOSITE SCAFFOLDS Guolong Wei, Peter X. Ma, University of Michigan, Department of Biomedical Engineering, Department of Biological and Materials Science, Ann Arbor, MI.

C11.38 CONTROLLED FUNCTIONALIZATION OF VARIOUS SUBSTRATES WITH DNA. Baosheng Yang, Sejong Kim, Shifeng Hou and Fotios Papatheodoropoulos, Univ. of Connecticut, IMS, Department of Chemistry, Storrs, CT.

C11.39 WELL DEFINED ORGANIC/INORGANIC HYBRID NANOPARTICLES BY ATOM TRANSFER RADICAL POLYMERIZATION. Thomas A.P. Seery, Dongqi Qin and Mark Jordi, Institute of Material Science and Chemistry Department, University of Connecticut, Storrs, CT.

C11.40 ICOSAHEDRAL VIRUS ASSEMBLIES FOR USE AS PHOTONIC CRYSTALS. S.B. Jabl, R.A. Vain, Air Force Research Laboratories, Wright Patterson Air Force Base, OH; Y. Ha, E. Thomas, Massachusetts Institute of Technology, Dept of Material Science and Engineering, Cambridge, MA; V. Ward, University of Orano, Dept of Microbiology, Orano, NEW ZEALAND.


C11.42 DEVELOPMENT OF SMALL PEPTIDES FOR BINDING OF CARBON NANOTUBES. R.H. Smith, L. Lorand, B.A. Little, D.A. Walters, Univ of Central Florida, Dept of Physics, Orlando, FL.

C11.43 ASSESSMENT OF CHEMICAL AND PHYSICAL PROPERTIES OF PROTEINS IN SOL-CEL GLASSES. Lymuri Fuente, Juan Oyola, Reginald Morales, Edwin Quiñones, University of Puerto Rico, Department of Chemistry, San Juan, PR.

C11.44 SELF-ASSEMBLY OF THE GLASS-CERAMICS/CDs/ENZYMES AGGREGATIONS IN THE OPTICAL TRAP. Andrey Zawalin, W. Eugene Collins, Steven Morgan, Dept of Physics, Fisk Univ, Nashville, TN.

C11.45 SELF-ASSEMBLY AND POLYMERIZATION OF BIOMIMETIC COLLOIDS USING PEPTIDE AMPHIPHILES. Raymond T. University of California, Santa Barbara, Dept of Chemical Engineering, Santa Barbara, CA; Markus Biesalski, University of Freiburg, Institute for Muscystem Technology, Freiburg, GERMANY; Matthew Timrell, University of California, Santa Barbara, Dept of Chemical Engineering, Santa Barbara, CA.

C11.46 ORDERED POROUS TEMPLATES AND REPLICA IN BIO-TECHNOLOGY. Ulrike Bahn, Petra Görig, Korinna Nielsch, Sven Matthies, Ralf B. Wehrspohn, and Ulrich Gösele, Max Planck Institute of Microstructure Physics, Halle, GERMANY.

C11.47 INVESTIGATION OF SUPPORTED LIPID BILAYERS ON A NANOPOROUS THIN POLYMER FILM. Steven Kohlihammer and Shrinidhi M. Bader, Department of Chemistry, Harvey Mudd College, Claremont, CA.

C11.48 PRODUCTION OF CoPt ALLOY GRAINS WITHIN PROTEIN TEMPLATES. B. Warne, D. Gleeson, R. Jones, A. Nartowski and E. Mayes, NanoMagnetics Ltd., Bristol, UNITED KINGDOM.

C11.49 HIGH GRADIENT SEPARATION OF MONODISPERSE MAGNETIC NANOPARTICLES. A. Bewick, J. Hainville, O. Kayutub, B. Warne, and E. Mayes, NanoMagnetics Ltd., Bristol, UNITED KINGDOM.

C11.50 DNA-ASSISTED 2D PHOTONIC CRYSTAL FABRICATION. Fotios Papatheodoropoulos, Sejong Kim, Baosheng Yang, and
C11.51
Molecular Simulation of Bio-Inspired Programmed Assembly of Nanoscale Building Blocks. L. Booth, T. Chen, M. Horsch, M. Lamm and S.C. Glotzer, Dept. of Chemical Engineering, University of Michigan, Ann Arbor, MI.

C11.52
Analysis of Subcellular Mechanical Activity in Engineered Cardiac Tissue on Elastic Scaffolds. E. Guan, State Univ. of New York at Stony Brook, Dept. of Materials and Engineering, Stony Brook, NY; Emilia Entcheva, Harold Bien, State Univ. of New York at Stony Brook, Dept. of Biomedical Engineering; Miriam Rafaelovich, Jonathan Sokolov, State Univ. of New York at Stony Brook, Dept. of Materials and Engineering, Stony Brook, NY.

C11.53
Assembly of Asymmetric Bilayers and Formation of Hybrid Vesicles. Sophie Pastot, D.A. Weitz, Harvard University, Dept. of Physics and DEAS, Cambridge, MA; Barbara J. Fransen, Simon Fraser University, Dept. of Physics, Burnaby, BC, CANADA.

C11.54
Fabrication of Stimulus-Responsive Polymeric Nanostuctures by Proximal Probes. Sang-Jung Ahn, Jinho Hyun, Woo Lee, Ashutosh Chilkoti, and Stefan Zwaner; Department of Mechanical Engineering and Materials Science and Department of Biomedical Engineering, Duke University, Durham, NC.