SYMPOSIUM C

Bio-Inspired Nanoscale Hybrid Systems

December 2 – 4, 2002

Chairs

Guenter Schmid	Univ Essen
Ulrich Simon	RWTH Aachen
Stephan J. Stranick	NIST
Steven M. Arrivo	Pfizer Global R&D
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* Invited paper
♣ Also in conjunction with Symposium NN

SESSION C1/NN1: JOINT SESSION
ARRAYS, ESSAYS AND DIAGNOSTICS - I
Chair: Guenter Schmid
Monday Morning, December 2, 2002
Room 208 (Hynes)

8:30 AM *C1.1/NN1.1
BIODIRECTED SYNTHESIS OF FUNCTIONAL MATERIALS USING NANOSCALE BUILDING BLOCKS. Chad A. Mirkin, Department of Chemistry and Institute for Nanotechnology, Northwestern University, Evanston, IL.

9:00 AM *C1.2/NN1.2
BIOMATERIAL-NANOPARTICLE HYBRID SYSTEMS FOR BIOELECTRONICS. Itamar Willner, Institute of Chemistry, The Hebrew University of Jerusalem, Jerusalem, ISRAEL.

9:30 AM C1.3/NN1.3
NANOPATTERNED SURFACES FOR CONTROLLED SELF-ASSEMBLY OF MOLECULES. Federico Rosei, Y. Naitoh, M. Schunack, E. Legsgaard, I. Stensgaard, and F. Besenbacher, Physics Department and I-NANO, University of Aarhus, DENMARK; P. Jiang, A. Gourdon, C. Joachim, CEMES-CNRS, Toulouse, FRANCE.

9:45 AM C1.4/NN1.4
CONDUCTANCE MICROSCOPY FOR ELECTRIC CONDUCTION STUDY OF BIOINSPIRED HYBRID NANOSTRUCTURES UNDER AMBIENT CONDITIONS. Saleem Rao, Wahyu Setyawan, Seunghun Hong, Florida State Univ, Dept of Physics, Tallahassee, FL.

10:00 AM BREAK

10:30 AM *C1.5/NN1.5
DNA-MEDIATED ASSEMBLY OF CARBON NANOTUBE DEVICES. Keith A. Williams, Peter Veenhuizen, Cees Dekker, Delft University of Technology, Department of Nanoscience and DIMES, Delft, THE NETHERLANDS.

11:00 AM C1.6/NN1.6
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 C1.7/NN1.7
A HIGH PERFORMANCE CELL PATTERNING FOR CELL-BASED SENSOR APPLICATIONS. Mandana Veiseh, Miqin Zhang, University of Washington, Dept of Materials Science & Engineering, Seattle, WA.

11:30 AM C1.8/NN1.8
MOLECULAR CASTING WITH DNA-MEMBRANE COMPLEXES. Hongjun Liang[a], Thomas E. Angelini[b], James Ho[c], Paul Braun[a] and Gerard C.L. Wong[a,b,c], University of Illinois at Urbana-Champaign, Urbana, IL; [a]Department of Materials Science and Engineering; [b]Department of Physics; [c]Department of Bioengineering.

SESSION C2/NN2: JOINT SESSION
ARRAYS, ESSAYS AND DIAGNOSTICS - II
Chair: Ulrich Simon
Monday Afternoon, December 2, 2002
Room 208 (Hynes)

1:30 PM *C2.1/NN2.1
FABRICATIONS OF PEPTIDE NANOTUBES FUNCTIONALIZED WITH BIOLOGICAL AND MOLECULAR RECOGNITIONS AND THEIR ASSEMBLIES INTO DEVICE CONFIGURATIONS. Hiroshi Matsui, Yung-fou Chen, Ramin Djilali, City Univ. of New York, Hunter College, Dept. of Chemistry, New York, NY.

2:00 PM *C2.2/NN2.2
NANOPARTICLE BIOCONJUGATE CHEMISTRY: STRENGTHENING BIOMOLECULES' GRIP ON GOLD. Sarah Evans, Aimee Erickson, Castro Laicer, Kyle Page, T. Andrew Taton, Department of Chemistry, University of Minnesota, Minneapolis, MN.

2:30 PM C2.3/NN2.3
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; Yet-Ming Chiang, Ellen S. Humphreys, Sung-Yoon Chung, Department of Materials Science & Engineering, Massachusetts Institute of Technology, Cambridge, MA.

2:45 PM C2.4/NN2.4
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 Bashir, Purdue University, School of Electrical and Computer Engineering, West Lafayette, IN.

3:00 PM C2.5/NN2.5
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 Fonseca, Janos Nagy, FUNDP, 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. Hoinville, A. Bewick, D. Gleeson, R. Jones, O. Kasyutich, A. Nartowski, B. Warne, J. Wiggins, and K.K.W. Wong, and E. Mayes, NanoMagnetics Ltd., Bristol, UNITED KINGDOM.

3:45 PM C3.2
PEPTIDE-MEDIATED SYNTHESIS OF MAGNETIC MATERIALS. Brian D. Reiss, Chaunbin Mao, Anuj Aggarwal, Daniel J. Solis, Angela M. Belcher, Center fo Nano-, and Molecular Science, University of Texas at Austin, Austin, TX.

4:00 PM C3.3
SUPERPARAMAGNETIC NANOPARTICLES FOR IMAGING. Nathan Kohler, Yong Zhang, Miqin Zhang, University of Washington, Dept of Materials Science, Seattle, WA.

4:15 PM C3.4
BIOTEMPLATE-DIRECTED 2-DIMENSIONAL NANOSTRUCTURE ASSEMBLY. Seungju M. Yu, Xiao Mo, 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 PATTERING OF PROTEIN CRYSTAL. Yoichiroh Hosokawa, Satoshi Matsumura, 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 Shimo-oka, 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.R. LaGraff[a], Y.-P. Zhao[b], D.J. Graber[c], D. Rainville[d], G.-C. Wang[b], T.-M. Lu[b], D. Szarowski[c], W. Shain[c], J.N. Turner[c]; [a]Department of Chemistry, Hamilton College, Clinton, NY; [b]Department of Physics, Applied Physics and Astronomy, Rensselaer Polytechnic Institute, Troy, NY; [c]Wadsworth Center, Albany, NY; [d]Department of Physics, Siena College, Loudonville, NY.

SESSION C4: ARRAYS, ESSAYS AND DIAGNOSTICS - IV
Chair: Stephan J. Stranick
Tuesday Morning, 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
PATTERNED POLYMER COMPOSITE MICROSRUCTURES FOR BIOLOGICAL APPLICATIONS. Haipeng 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
ARRAYING 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
NANOSTRUCTURED ARRAYS OF ARTIFICIAL SYNAPSES FOR CONTROL OF T CELL ACTIVATION. Junsang Doh 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: Stephan J. Stranick
Tuesday Morning, 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 Leis, University of Essen, Dept Physical Chemistry, Essen, GERMANY.

11:00 AM C5.2
NANO-FIBROUS 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 WEAK POLYELECTROLYTE MULTILAYERS. Michael C. Berg, MIT, Dept of Chemical Engineering, Cambridge, MA; Sung Yun Yang, Jonas 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
NANO-SCALE MODIFICATION OF METAL SURFACES FOR BIOMEDICAL APPLICATIONS. Anna Marie Lipski[b], Hoon Choi[b], James Ferris[b], Douglas Yates[b], I-Wei Chen[b] and V. Prasad Shastri[a,b], [a]Joseph Stokes Jr., Research Institute, Children's Hospital of Philadelphia, Philadelphia, PA and [b]Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA.

11:45 AM C5.5
PROCESSING MICRO- AND NANO-COMPOSITES OF HYDROXYAPATITE AND POLY(LACTIC ACID). Rodney Priestley, Antonio Senador, 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: Seunghun Hong
Tuesday Afternoon, December 3, 2002
Room 208 (Hynes)

1:30 PM *C6.1
NANOSTRUCTURING OF SURFACES USING ANODIC ALUMINA MEMBRANES — METHODS, MATERIALS AND PROPERTIES. Thomas Sawitowski, AlCove Surfaces GmbH, Gladbeck, GERMANY.

2:00 PM C6.2
NANOSTRUCTURED AND AUTO-REGENERATING HYBRID INORGANIC/POLYMER COATINGS FOR A DURABLE SELF-CLEAN EFFECT IN OPTICAL QUALITY. K. Reihs, O. Stahlschmidt, P. Cavaleiro, R. Claessen, SuNyx Surface Nanotechnologies GmbH, Cologne, GERMANY; A. Duparre, Fraunhofer-Institut Angewandte Optik und Feinmechanik IOF, Jena, GERMANY.

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

2:30 PM C6.4
NANOPARTICULATE HYDROXYAPATITE ENHANCES THE BIOACTIVITY OF A RESORBABLE BONE GRAFT SUBSTITUTE. Stephen A. Doherty, David D. Hile, Donald L. Wise, Debra J. Trantolo, Cambridge Scientific, Inc., Cambridge, MA; Kai-Uwe Lewandrowski, Massachusetts General Hospital, Orthopaedics Research Laboratory, Boston, MA; Jackie Y. Ying, Massachusetts Institute of Technology, Dept of Chemical Engineering, Cambridge, MA; Stephen T. Sonis, Harvard School of Dental Medicine, Dept of Oral Medicine and Diagnostic Sciences, Boston, MA.

2:45 PM C6.5
BIOMIMETIC POLY(L-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 C7: BIOMATERIALS - I
Chair: Seunghun Hong
Tuesday Afternoon, December 3, 2002
Room 208 (Hynes)

3:30 PM *C7.1
ADVANCED DYNAMIC SCANNING PROBES FOR THE CHARACTERIZATION OF SELF-ORGANIZED ORGANIC LAYERS. Harald Fuchs, Physikalisches Institut Westfälische Wilhelms-Universität Münster and Center for Nanotechnology (CeNTech), Münster, GERMANY.

4:00 PM *C7.2
POLYELECTROLYTE MULTILAYERS IN LIFE SCIENCE. Gero Decher, Univ Louis Pasteur, Institut Charles Sadron, Strasbourg, FRANCE.

4:30 PM C7.3
MOLECULAR BIOMIMETICS: NEW STRATEGIES IN MOLECULARLY HYBRID MATERIALS. D. Heidel[a], S. Dincer[a], M. Duman[a], C. Nguyen, W-S. Choe, F. Baneyx, and Mehmet Sarikaya[a], [a]Materials Science and Engineering, and Chemical Engineering, University of Washington, Seattle, WA.

4:45 PM C7.4
SIMULATIONS OF CHIRAL LIQUID CRYSTAL SELF-ASSEMBLY: ANNALOGIES WITH THE STRUCTURAL FORMATION OF BIOLOGICAL FIBROUS COMPOSITES. Gino De Luca, Alejandro D. Rey, McGill University, Dept of Chemical Engineering, Montreal, QC, CANADA.

SESSION C8: BIOMATERIALS - II
Chair: Dieter Fenske
Wednesday Morning, December 4, 2002
Room 208 (Hynes)

8:30 AM *C8.1
DEVELOPMENT OF A SYSTEM FOR EVALUATION OF ACCELERATED MICROBIAL BIODEGRADATION OF CEMENTITIOUS MIXTURES USED FOR IMMOBILIZATION OF LOW-LEVEL RADIOACTIVE WASTE. Alex Sivan, Orli Aviam, Merav Koresh, Ben Gurion Univ. of The Negev, Institute for Applied Biosciences, Beer Sheva, ISRAEL; Gabriela Bar-Nes, Yehuda Zeiri, Nuclear Research Center Negev, Dept. of Chemistry, Beer Sheva, ISRAEL.

9:00 AM C8.2
BIO-INSPIRED NANOSCALE POLYMER-CERAMIC HYBRID SYSTEMS. Ulrich Wiesner, Cornell University, Dept of Materials Science and Engineering, Ithaca, NY.

9:15 AM C8.3
CONTROLLED DRUG RELEASE FROM NANOSTRUCTURED SOL-GEL HYBRIDS. C.J. Barbe, R. Beyer and J.R. Bartlett, ANSTO, Menai, AUSTRALIA.

9:30 AM *C8.4
Jim Heath, University of California-Los Angeles, CA. ♣

10:00 AM BREAK

SESSION C9: PARTICLES - I
Chair: Dieter Fenske
Wednesday Morning, December 4, 2002
Room 208 (Hynes)

10:30 AM *C9.1
BIOLOGICAL 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, Viswanadham Garimella, Uwe Muller, Tim Patno, Chris Khoury, Nanosphere Inc., Northbrook, IL.

11:30 AM C9.3
ODERING OF QUANTUM DOTS USING GENETICALLY ENGINEERED VIRUSES. Seung-Wuk Lee, Chuanbin 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 Gloddek, Ulrich Simon, RWTH Aachen, Institute of Inorganic Chemistry, Aachen, GERMANY. ♣

SESSION C10: PARTICLES - II
Chair: Steven M. Arrivo
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, Hai Long, Lin Lin Zhou and K. Lance Kelly, Northwestern Univ, Evanston, IL.

2:00 PM C10.2
THEORETICAL STUDY OF ELECTRON TRANSPORT THROUGH METALLIC NANOPARTICLES. Yongqiang Xue, Mark A. Ratner, 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. E. Dulkeith, A.C. Morteani, T. Niedereichholz, T.A. Klar and J. Feldmann, Photonics and Optoelectronics Group, Physics Department and CeNS, University of Munich, GERMANY; S. Levi, F.C.J.M. van Veggel, D.N. Reinhoudt, Lab. for Supramolecular Chemistry and Technology, University of Twente, Enschede, THE NETHERLANDS; D.I. Gittins, Max-Planck-Institute of Colloids and Interfaces, Potsdam, GERMANY; M. Moeller, Dept. Org. Chemie III/Macromolekulare Chemie-OC III, Univ. of Ulm, GERMANY.

2:30 PM C10.4
SYNTHESIS OF COBALT NANOPARTICLES, NANORODS AND NANOWIRES ASSISTED BY OLEIC ACID AND OLEYLAMINE BASED MIXTURES. 2D AND 3D ORGANIZATION. Frederic Dumestre, Philippe Renaud, Digital DNA Labs, Semiconductor Products Sector, Motorola, Toulouse, FRANCE; Catherine Amiens, Bruno Chaudret, LCC-CNRS, Toulouse, FRANCE; Marie-Claire Fromen, Marie-Jose Casanove, CEMES-CNRS, Toulouse, FRANCE; Peter Zurcher, Digital DNA Labs, Semiconductor Products Sector, Motorola, AZ.

2:45 PM C10.5
TEMPERATURE PROGRAMMED ASSEMBLY OF METAL NANOPARTICLES. Glenn P. Goodrich, Mahnaz El-Kouedi, Christine D. Keating, The Pennsylvania State University, Dept of Chemistry, University Park, PA.

3:00 PM BREAK

3:15 PM C10.6
BIO-INSPIRED DESIGN OF POLYMERS AS ANTIMICROBIAL PEPTIDE MIMICS. Gregory N. Tew and Lachelle Arnt, Department of Polymer Science and Engineering, University of Massachusetts-Amherst, Amherst, MA.

3:30 PM C10.7
EXTERNAL CONTROL OF BIOMOLECULAR ACTIVITY VIA COVALENTLY ATTACHED NANOCRYSTAL ANTENNAS. Kim Hamad-Schifferli, Department of Mechanical Engineering, Joseph Jacobson, Media Lab; Jian Ping Shi, Shuguang Zhang, Center for Biomedical Engineering, MIT, Cambridge, MA.

3:45 PM C10.8
HUMAN SPERMATOZOA ON NANOSTRUCUTURED Ag DEPOSITED ON GaAs SURFACE. Lucia G. Quagliano, Consiglio Nazionale delle Ricerche, CNR Institute for Nanostructured Materials, ISMN Area della Ricerca di Roma 1, Roma, ITALY.

4:00 PM C10.9
COLLOIDS + DNA: FROM MORPHOLOGICAL DIVERSITY TO PROGRAMMABLE SELF-ASSEMBLY. Alexei V. Tkachenko, Department of Physics, University of Michigan, Ann Arbor, MI.

4:15 PM C10.10
NANOSCALE PARTICLE ARRAYS INDUCED BY HIGHLY ORDERED PROTEIN ASSEMBLIES. Silke Behrens, Eckhard Dinjus, Forschungszentrum Karlsruhe, Institute of Technical Chemistry, GERMANY; Eberhard Unger, Institute of Molecular Biotechnology, Jena, GERMANY.

4:30 PM C10.11
ENZYME-CONTAINING CARBON NANOTUBES FOR BIOCATALYTIC NANOMATERIALS. Dae-Yun Kim, Sandeep S. Karajanagi, Ravi S. Kane, Jonathan S. Dordick, Rensselaer Polytechnic Institute, Department of Chemical Engineering, Troy, NY; Nirapuma Chakrapani, Pulickel Ajayan, Rensselaer Polytechnic Institute, Department of Materials Science and Engineering, Troy, NY.

4:45 PM C10.12
STIMULI-RESPONSIVE NANOPARTICLES FOR CONTROLLED INSULIN DELIVERY. Todd C. Zion, Monica Sircar, Henry H. Tsang, Jackie Y. Ying, Massachusetts Institute of Technology, Cambridge, MA.

SESSION C11: POSTER SESSION
Chairs: Guenter Schmid and Ulrich Simon
Wednesday Evening, December 4, 2002
8:00 PM
Exhibition Hall D (Hynes)

C11.1
CONTROLLABLE FORMATION OF VIRAL ARRAYS USING DNA. Erica Strable[a,b], John E. Johnson[a], M.G. Finn[b], The Scripps Research Institute, [a]Department of Molecular Biology, [b]Department of Chemistry, La Jolla, CA.

C11.2
SCALED PRODUCTION OF NANOPARTICLES WITHIN PROTEIN TEMPLATES. R. Jones, D. Gleeson, A. Nartowski, B. Warne, K.K.W. Wong and E. Mayes, 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. Pulliam-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
BIOINSPIRED IN SITU POLYMER HYDROXYAPATITE NANOCOMPOSITES FOR BONE REPLACEMENT. Kalpana Katti, Praveen Kumar Gujjula, Phanikumar Turlapati, 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 NANO-ASSEMBLY. Mahnaz El-Kouedi, Glenn P. Goodrich, Lisa M. Dillenback, Mark R. Etherton, Brian D. Reiss, Christine D. Keating, Pennsylvania State Univ, 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 THIOL-DISULFIDE EXCHANGE REACTION FOR SITE SPECIFIC IMMOBILIZATION OF BIOMOLECULES. Elisabeth Pavlovic, Sven Oscarsson, Center for Surface Biotechnology, Uppsala University, Uppsala, SWEDEN and Dept. of Chemical Engineering, Mälardalen University, Eskilstuna, SWEDEN; Arjan Quist, Center for Surface Biotechnology, Uppsala University, Uppsala, SWEDEN; Ulrik Gelius, Dept. of Physics, Uppsala University, Uppsala, SWEDEN.

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

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

C11.11
ENGINEERED FILMS OF *BOMBYX MORI* SILK WITH POLY(ETHYLENE OXIDE). Hyoung-Joon Jin, Jaehyung Park, David L. Kaplan, Tufts University, Department of Chemical & Biological Engineering, Bioengineering Center, Medford, MA; Peggy Cebe, Tufts University, Department of Physics and Astronomy, Medford, MA.

C11.12
HUMAN BONE MARROW STEM CELL RESPONSES ON ELECTROSPUN *BOMBYX MORI* SILK FIBROIN. Hyoung-Joon Jin, Jingsong Chen, Vassilis Karageorgiou, Gregory H. Altman, David L. Kaplan, 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 Valluzzi, 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. Bergstorm, 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. Hitoshi Omuro, Masato Nakagawa[a], Hiroaki Fukuda[b] and Masataka Murahara, Department of Electrical Engineering, Tokai Univ, Hiratuka, Kanagawa, JAPAN; [a]Mizue Clinic, Edogawa, Tokyo, JAPAN; [b]Saiseikai Hiratuka Hospital, Hiratuka, Kanagawa, JAPAN.

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

C11.20
PREPARATION AND CHARACTERIZATION OF MESO-STRUCTURED POROUS SILICA FILMS WITH CLOSED CELLS. Kui Yu, National Research Council Canada, Steacie 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.

C11.21
DNA-MEDIATED ASSEMBLY OF BIDISPERSE, MICRON-SIZED COLLOIDS. Valeria T. Milam, Amy Hiddessen, Daniel A. Hammer, Dept of Bioengineering, University of Pennsylvania, Philadelphia, PA; John C. Crocker, David J. Graves, Dept of Chemical Engineering, University of Pennsylvania, Philadelphia, PA.

C11.22
FRACTURE AND FATIGUE BEHAVIOR OF A SELF-HEALING POLYMER COMPOSITE. Eric N. Brown, Nancy R. Sottos[a], Dept of Theoretical & Applied Mechanics, Urbana, IL; Scott R. White[a], Dept of Aerospace Engineering, Urbana, IL; Jeffrey S. Moore[a], Dept of Chemistry, Urbana, IL. [a]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 Bermudez[a], Aaron K. Brannan[b], Frank S. Bates[b], Daniel A. Hammer[a], Dennis E. Discher[a]; [a]School of Engineering and Applied Science, University of Pennsylvania, Philadelphia, PA; [b]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, Department of Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis, MN.

C11.25
ORGANIC/INORGANIC HYBRID NANO- AND MICRO-

COMPOSITES OF POLYANILINE AND METAL OXIDES. Yue Ma, Kaiguo Chang, Hui Wan, Zhexiong Tang, Sze C. Yang, Dept of Chemistry, University of Rhode Island, Kingston, RI; John Sinko, Wayne Pigment Corp., Milwaukee, WI.

C11.26
HOLLOW SHELLS OF EXFOLIATED TITANIA NANOSHEETS FABRICATING BY LAYER-BY-LAYER ASSEMBLY ON POLYMER TEMPLATES. Lianzhou Wang, Takayoshi Sasaki, Yasuo Ebina, and Mamoru Watanabe, Advanced Materials Laboratory, National Institute for Materials Science, Tsukuba, JAPAN.

C11.27
NEPHELOMETRIC DETECTION OF SINGLE NUCLEOTIDE DIFFERENCE BASED ON SALTING-OUT TECHNIQUES WITH DNA-CARRYING COLLOIDAL NANOPARTICLES. Tohru Takarada, Zhonglan Tang, Mizuo Maeda, Kyushu Univ, Dept of Applied Chemistry, Fukuoka, JAPAN and RIKEN, Bioengineering Lab, Wako, JAPAN.

C11.28
LASER-INDUCED PHOTOCHEMICAL SURFACE MODIFICATION OF INTRAOCULAR LENS FOR BLOCKING AFTER-CATARACT. Katsuya Tanizawa, Yuji Sato, Masataka Murahara, Tokai Univ, Dept of Electrical Engineering, Kanagawa, JAPAN; Jean Marie Parel, Univ of Miami School of Medicine, Bascom Palmer Eye Institute, Miami, FL.

C11.29
SCAFFOLDING FOR THE RE-GROWTH OF BONE TISSUE DEVELOPED FROM A HYDROXYAPATITE/ POLYCAPROLACTONE COMPOSITE. S. Iadarola[a], A. Crugnola[b], R. Joshi[b], J. Tessier[c], B. Kang[a], S. Farboodmanesh[d], and C. Sung[a]; [a]Department of Chemical and Nuclear Engineering, Center for Advanced Materials, University of Massachusetts Lowell, Lowell, MA; [b]Department of Plastics Engineering, University of Massachusetts Lowell, Lowell, MA; [c]Department of Clinical Science, University of Massachusetts Lowell, Lowell, MA; [d]Department of Mechanical Engineering, University of Massachusetts Lowell, Lowell, MA.

C11.30
PATTERNING CELLS USING THE H-BONDED POLY-ELECTROLYTE MULTILAYER TEMPLATE. Sung Yun Yang, Michael F. Rubner, Massachusetts Institute of Technology, Dept of Materials Science and Engineering, Cambridge, MA.

C11.31
DNA DIRECTED MAGNETIC NETWORK FORMATIONS WITH FERROMAGNETIC NANOPARTICLES. H.Y. Lee, Y. Sacho, T. Kanki, I. Terawaki, H. Tanaka, and T. Kawai, The Institute of Scientific and Industrial Research, Osaka University, Osaka, JAPAN; J.W. Cheon, J.H. Yoon, Department of Chemistry, Yonsei University, Seoul, KOREA.

C11.32
CONTROLLED TAILORING OF DNA CHAIN LENGTH THROUGH DNA/LDH NANOHYBRID SYSTEM. Jae-Min Oh[a], Seo-Young Kwak[b], Jin-Ho Choy[a]; [a]Seoul National University, Seoul, KOREA; [b]University of Illinois, Urbana, IL.

C11.33
NANOSTRUCTURED BIOCOMPOSITE AEROGELS. J.M. Wallace, J.W. Long, J.K. Rice, R.M. Stroud, and D.R. Rolison, Naval Research Laboratory, Washington, DC.

C11.34
"STICKY" POLYMERS: ACTIVATED POLY(PHENYLENE ETHYNYLENE)S FOR BIOCONJUGATION AND SURFACE FUNCTIONALIZATION. Jordan H. Wosnick, 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 Benrezzak, Manuel Ruether, Dept. of Physics, Trinity College Dublin, Dublin, IRELAND; Fiona Frehill, Johannes Vos, National Centre for Sensor Research, Dublin City University, Dublin, IRELAND; Marc in het Panhuis, Functional Materials Group, Dept. of Physcis, Trinity College Dublin, Dublin, IRELAND.

C11.37
STRUCTURE AND PROPERTIES OF POLY(α-HYDROXYL ACIDS)/NANO HYDROXYAPATITE COMPOSITE SCAFFOLDS. Guobao Wei, Peter X. Ma, Univerisity of Michigan, Department of Biomedical Engineering, Department of Biological and Materials Science, Ann Arbor, MI.

C11.38
CONTROLLED FUNCTIONALIZATION OF VARIOUS SUBSTRATES WITH DNA. Baocheng Yang, Sejong Kim, Shifeng Hou and Fotios Papadimitrakopoulos, 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. Juhl, R.A. Vaia, 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 Otago, Dept of Microbiology, Otago, NEW ZEALAND.

C11.41
DNA TEMPLATING OF ETHYLENE OXIDE COATED NANOCLUSTERS. S. Jhaveri, E.E. Foos, M.G. Ancona, A.W. Snow, M.E. Twigg, E. Chang, E. Goldman, Naval Research Laboratory, Washington, DC; L. Pilobello, D. Lowy, Nova Research, Alexandria, VA.

C11.42
DEVELOPMENT OF SMALL PEPTIDES FOR BINDING OF CARBON NANOTUBES. R.H. Smith, L. Lopatiuk, 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-GEL GLASSES. Lymari Fuentes, Jessica Oyola, Reginald Morales, Edwin Quinones, University of Puerto Rico, Department of Chemistry, San Juan, PR.

C11.44
SELF-ASSEMBLY OF THE GLASS-CERAMICS/CdSe/ENZYME AGGREGATIONS IN THE OPTICAL TRAP. Andrey Zavalin, 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 Tu, University of California-Santa Barbara, Dept of Chemical Engineering, Santa Barbara, CA; Markus Biesalski, University of Freiburg, Institute for Microsystem Technology, Freiburg, GERMANY; Matthew Tirrell, University of California-Santa Barbara, Dept of Chemical Engineering, Santa Barbara, CA.

C11.46
ORDERED POROUS TEMPLATES AND REPLICAS IN BIOTECHNOLOGY. Ulrike Rehn, Petra Göring, Kornelius Nielsch, Sven Matthias, 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 Kolthammer and Shenda M. Baker, 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. Hoinville, O. Kasyutich, B. Warne, and E. Mayes, NanoMagnetics Ltd., Bristol, UNITED KINGDOM.

C11.50
DNA-ASSISTED 2D PHOTONIC CRYSTAL FABRICATION. Fotios Papadimitrakopoulos, Sejong Kim, Baocheng Yang, and

Shifeng Hou, Nanomaterials Optoelectronics Laboratory, Department of Chemistry, Polymer Program, Institute of Materials Science, University of Connecticut, Storrs, CT.

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 Rafailovich, 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 Pautot, D.A. Weitz, Harvard University, Dept of Physics and DEAS, Cambridge, MA; Barbara J. Frisken, Simon Fraser University, Dept of Physics, Burnaby, BC, CANADA.

C11.54
FABRICATION OF STIMULUS-RESPONSIVE POLYMERIC NANOSTRUCTURES BY PROXIMAL PROBES. Sang-Jung Ahn, Jinho Hyun, Woo Lee, Ashutosh Chilkoti, and Stefan Zauscher; Department of Mechanical Engineering and Materials Science and Department of Biomedical Engineering, Duke University, Durham, NC.