Third International Conference on Nano-Networks
Nano-Net 2008
Radisson Hotel Boston (Boston, Massachusetts)
September 14-16, 2008

General Conference Program

Nano-Net 2008 - Technical Program at a Glance

	Sunday, 14.09.2008 Workshop	Sunday, 14.09.2008 Tutorial	Monday, 15.09.2008	Tuesday, 16.09.2008
07:30				
08:00				
08:30	Registration		Registration	Registration
09:00	S. Goel		Keynote address 1	Keynote address 2
09:30	Nano-		Tatsuya Suda	Sylvain Martel
10:00	sensors		Coffee break	Coffee break
10:30	Coffee Br.		Regular	Regular
11:00			Session	Session
11:30				
12:00			Block 1	Block 3
12:30	Lunch	Registr.	Lunch break	Lunch break
13:00	break	Tutorial		
13:30		W. Lu		
14:00		CNTs	Regular	Keynote address 3
14:30			Session	Neil Gershenfeld
15:00	Coffee Break			Short paper Posters
15:30			Block 2	Coffee break
16:00			Coffee break	Regular
16:30			Panel	Session
17:00			W. Wang	
17:30			Neuromorphic	Block 4
18:00				
18:30				
19:00			Social	
19:30			Event	
20:00				
20:30				
21:00				
21:30				
22:00				

Sunday, September 14, 2008

Location: City Room A

Workshop **Workshop on Nanosensors: Self-Organization and Swarm Robotics**
Third International Conference on Nano-Networks (Nano-Net 2008)
Radisson Hotel Boston (Boston, Massachusetts)
September 14, 2008
Sanjay Geol University at Albany, SUNY

8:00 – 9:00: BREAKFAST AND REGISTRATION

9:00 – 10:30: Session 1: Overview
Title: Harnessing the Swarm – From Ants to Robots (Welcome)
Speaker: Sanjay Goel
Affiliation: University at Albany, SUNY (UAlbany)

Title: Self-Organization and Nanoscale Networking (Theme)
Speaker: Stephen F. Bush
Affiliation: GE Global Research

Title: Nano Robotics: From Science Fiction to Reality (Keynote)
Speaker: Constantinos Mavroidis
Affiliation: Department of Mechanical and Industrial Engineering, Northeastern University, Boston MA

10:30 – 11:00 BREAK *(Location: City Room)*

11:00 – 12:15: Session 2: Swarm Robotics I
Title: Swarm Robotics for Construction Tasks
Speaker: Aristides A. G. Requicha
Affiliation: Laboratory for Molecular Robotics, University of Southern California, Los Angeles, CA

Title: Towards Inspection of Industrial Machinery with Miniature Robotic Swarms
Speaker: Nikolaus Correll
Affiliation: Distributed Robotics Laboratory, Massachusetts Institute of Technology, Boston, MA

12:15 – 1:45 LUNCH (ROUND TABLE, *Location: Carver Three***)**

1:45 – 3:00: Session 3: Swarm Robotics II
Topic: Miniature Mobile Robots Down to Micron Scale
Authors: Metin Sitti
Affiliation: Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA

Paper: Role of Wireless Communications in Networking and Motion Control of Micro Robot Swarm
Authors: Shinsuke Hara, Tatsuya Ishimoto, Masaya Kitano and Tetsuo Tsujioka
Affiliation: Graduate School of Engineering, Osaka City University, Osaka Japan

3:00 – 3:30 BREAK *(Location: City Room A)*

3:30 – 5:30 Session 4: Sensor Self-Organization
Paper: Self-Organizing smart dust sensors for planetary exploration
Authors: John R Barker and Fernando Rodriguez-Salazar
Affiliation: Nanoelectronics Research Centre, Dept. of Electronics and Electrical Engineering, University of Glasgow, Glasgow, Scotland, United Kingdom

Topic: Protoswarm: a Programming Language for Programming Swarm Robotics
Authors: Jonathan Bachrach
Affiliation: Makani Power, Alameda, California 94501

Topic: Optically Active Nanomaterials for use as Chemical Sensors
Author: Michael Carpenter
Affiliation: University at Albany, SUNY (UAlbany)

6:00 – 7:30 DINNER

Sunday, September 14, 2008

Location: City Room B

12:30	Registration	
Tutorial	**Properties and Applications of Carbon Nanotubes and Other 1D Nanostructures** *Wei Lu University of Michigan* Tutorial Chair *Yun Li General Electric, USA*	
13:00 – 15:00	Part 1	
15:00	Coffee break	*Location: City Room A*
15:30 – 16:30	Part 2	

Monday, September 15, 2008

Location: Lobby

08:30 – 09:00 Registration

Location: Exeter

09:00 – 09:10 Welcome address, and conference information
Stephen F. Bush General Chair Nano-Net 2008 General Electric, USA

Keynote 1 **Molecular Communication: A New Paradigm for Communication Among Biological Nanomachines**
09:10 – 10:10 *Tatsuya Suda University of California, Irvine*

10:10 Coffee break

Session 1 **Nano-Biological Systems**
Session Chairs
Tatsuya Suda University of California, Irvine
Sasitharan Balasubramaniam Waterford Institute of Technology, Ireland

10:30 A Biochemically-Engineered Molecular Communication System (Invited Paper)
Satoshi Hiyama, Yuki Moritan Research Labs. NTT DoCoMo
Tatsuya Suda Research Labs. NTT DoCoMo, University of California Irvine

11:00 Hybrid DNA and Enzymatic based Computation for Address Encoding, Link Switching and Error Correction in Molecular Communication
Frank Walsh, Sasitharan Balasubramaniam, Dimitri Botvich, Micheal O Foghlu Waterford Institute of Technology, Ireland
Tatsuya Suda University of California, Irvine
Stephen F. Bush GE Global Research, NY

11:30 Digital Microfluidic Logic Gates
Yang Zhao, Krishnendu Chakrabarty, Tao Xu Duke University

12:00 A SWNT-based sensor for detecting human blood alcohol concentration
H. Leng, Yingzi Lin Northeastern University

Lunch break *Location: Dartmouth Room*
12:30 – 14:00

Location: Exeter

Session 2 **Novel Information and Graph Theory Aspects of Nano-Networks, and Applications for Nano-Networks**
Session Chairs
Radu Marculescu Carnegie Mellon University
Sumit Roy U. Washington

14:00 Random Walks on Random Graphs (Invited Paper)
Colin Cooper King's College, University of London
Alan Frieze Carnegie Mellon University

14:30 Using Randomly Assembled Networks for Computation
Andrey Zykov, Gustavo de Veciana University of Texas at Austin

15:00 Hitting Time Analysis for Stochastic Communication
Paul Bogdan, Radu Marculescu Carnegie Mellon University

15:30 NEMS Capacitive Sensors for Highly Sensitive Label -Free Nucleic-acid Analysis
Manu Sebastian Mannoor, Teena james New Jersey Institute of Technology

16:00 Coffee break

Location: Exeter

Panel Session **Using Advanced Micro/Nano-electronic Technology to Establish Neuromorphic Systems**
16:30 – 18:30 Session Chair *Wei Wang, UAlbany*

Pannel Participants
Garrett Rose ECE Department of Polytechnic Institute of NYU
Vladimir Gorelik Founder of Neuronix
Shih-Chii Liu Institute of Neuroinformatics, Zurich
Matthew Hynd Wadsworth, Albany, NY

Location: Dartmouth

Social Event **Banquet**
19:00 – 21:00

Tuesday, September 16, 2008

Location: Exeter

08:30 – 09:00 Registration

09:00 – 09:05 Conference information

Keynote 2 **Towards Intelligent Bacterial Nanorobots Capable of Communicating with the Macro-World**

09:05 – 10:05 *Sylvain Martel Computer Engineering & Software Engineering École Polytechnique Montréal*

10:05 Coffee break

Session 3 **Nano-Robotics, Device Physics and Interconnects**

Session Chairs
Nikolaus Correll MIT
Alexander Sergienko Boston University

10:30 Optical Networking in a Swarm of Microrobots (Invited Paper)
Paolo Corradi, Arianna Menciassi, Paolo Dario Scuola Superiore Sant'Anna, Italy
Thomas Schmickl Karl-Franzens-University, Austria
Oliver Scholz Fruuenhofer Institute for Biomedical Eng., Sankt Ingbert, Germany

11:00 Counting photons using a nanonetwork of superconducting wires (Invited Paper)
Andrea Fiore TU Eindhoven

11:30 Exploring Multi-layer Graphene Nanoribbon Interconnects
Sansiri Tanachutiwat, Wei Wang University at Albany, Albany, NY

12:00 Normal and Reverse Temperature Dependence in Variation-Tolerant Nanoscale Systems with High-k Dielectrics and Metal Gates
David Wolpert University of Rochester

Location: Dartmouth

Lunch break
12:30 – 14:00

Location: Exeter

Keynote 3 **Programming Bits and Atoms**

14:00 – 15:00 *Neil Gershenfeld Center for Atoms and Bits, MIT*

Location: Exeter

Poster Session

15:00 – 15:30 Session Chair
Radu Marculescu Carnegie Mellon University

Proposal for Memristors in Signal Processing
Blaise Mouttet George Mason University

Self Assembly of Nanosphere to Fabricate Devices for Logic Applications
Vivian Ng, Lalit Kumar Verma National University of Singapore

Voltage Controlled Carbon Nanotube Addressing Circuit
Bao Liu University of California San Diego

Impact of Process Variation in Fault-Resilient Streaming Nanoprocessors
Michael Leuchtenburg, Pritish Narayanan, Teng Wang, Csaba Andreas Moritz UMass, Amherst

Structural Fault Modelling in Nano Devices
Raghavendra N. V., M. S. Gaur, V. Laxmi, Ujjwal Kumar Malaviya National Institute of Technology, Jaipur

15:30 – 16:00 Coffee break

Session 4 **Modeling, Simulation, Standards and Architectural Aspects of Nano-Networks**

Session Chairs
Alexander Sergienko Boston University
Kaustav Banerjee UCSB

16:00 Communicating Mobile Nano-Machines and Their Computational Power (Invited Paper)
Jiri Wiedermann Academy of Sciences of the Czech Republic
Lukas Petru Charles University, Prague

16:30 Application of Molecular Electronics Devices in Digital Circuit Design
Ci Lei Lancaster University

17:00 FPAA Based on Integration of CMOS and Nanojunction Devices for Neuromorphic Applications

Hua Yu, Wei Wang University at Albany, NY

17:30 3D CMOL Crossnet for Neuromorphic Network Applications
Kevin Ryan, James Ryan, Sansiri Tanachutiwat, Wei Wang University at Albany, NY

18:00 A Dual-Mode Hybrid ARQ Scheme for Energy Efficient On-Chip Interconnects
Bo Fu University of Rochester

Conference Closing

18:30 – 18:40 Closing address
Stephen F. Bush General Chair Nano-Net 2008 General Electric, USA