

AD HOC NETWORKS (ELSEVIER) JOURNAL

A Special Issue on

“Nanoscale Networking”

“There is plenty of room at the bottom” as Feynman presciently stated about the atomic scale, and communication is needed down there. There is a growing trend of results from diverse approaches that both leverages and overcomes the environment at the nanoscale. These include molecular motors, random carbon nanotube networks, calcium signaling, and quantum networking to name a few. The goal of this issue is to focus upon ad hoc networking at the nanoscale and thus is **not** seeking static system-on-chip results unless they are in support of ad hoc nanoscale network approaches. The following list provides example topics (in no particular order):

- **Molecular Communication:** Sparse-molecule communication, molecular motors, calcium signaling, communication via diffusive processes, single-nanotube radios, pheromones and stigmergic communication, etc...
- **Quantum Communication Networks:** Hybrid classical quantum communication networks, repeaters, teleportation, entanglement swapping, nanoscale photon detectors, quantum dot networks, networks and quantum robotics, etc...
- **Applications for Nano-Networks:** Wireless nanoscale transmitters and receivers, nano-sensors and actuators, nanorobotics, medical and in-vivo imaging and sensing, lab-on-a-chip, swarm micro- and nano-inspection, embedding sensing, etc...
- **Modeling, Simulation, Standards and Architectural Aspects of Nano-Networks:** Physical characterization/modeling of nano-scale interconnects and devices, fault-tolerant and reliability of nano-devices, self-healing properties of nano-networks, energy efficiency, bio-inspired aspects, etc...
- **Novel Information and Graph Theory Aspects of Nano-Networks:** Network architectures and topologies, statistical mechanics approach to nano-communications, routing/addressing issues in nano-networks, nano-coding, applications of complex network theory, self-organization in nano-scale systems, modeling of nano/bio communication channels, etc...
- **Device Physics and Interconnects:** Nano-technologies and devices for nanoscale biological and ad hoc network on-chip interconnects (calcium signaling, molecular motors, CNTs, graphene nano-ribbons, semic., metallic and DNA-templated nanowires), optical and wireless interconnects, etc...
- **Nano-Robotics:** Communication systems and networking protocols for sub-inch robotic systems, including low-bandwidth coordination schemes for nano-robot teams and range and bearing devices for inter-robot relative positioning, etc...
- **Bio-nano Applications:** Bio-micro/nanoelectronics, molecular scale chemical and biosensors, bio-MEMS technology, data and power management, nano-scale and molecular communications and information processing, Information theory analysis of biological communications, molecular computation using molecular cells, chemical computing, etc...

The list is not restrictive - authors are encouraged to contact the editors before submitting a paper to determine whether the proposed submission is within the scope of this Special Issue.

Prospective authors should prepare their manuscripts according to the guidelines in the Guide for Authors, found at <http://ees.elsevier.com/adhoc>, and submit them to the online submission and reviewing tool, at <http://www.editorialmanager.com/comnet>, choosing the Article Type: **SI-Nanoscale Networking**.

Important Dates

Paper Submission Deadline:	Sep 4, 2009
Notification:	Feb 12, 2010
Revisions due:	May 7, 2010
Final version due:	Jul 9, 2010
Publication Date:	2 nd half 2010

Guest Editor

Stephen F Bush, IEEE Nano-Scale, Molecular, and Quantum Networking Committee Chair,
(bushsf@research.ge.com)