



## CALL FOR PAPERS

Nano Communication Networks Journal (Elsevier)



**Special Issue on  
FUNDAMENTALS OF NANOSCALE COMMUNICATIONS  
(Submission Deadline Extended to **June 1, 2010**)**

Incredible improvements in nanotechnologies have enabled the vision of *nanonetworks* composed of a number of nanomachines communicating with each other for a specific nanoscale application. Due to size and capabilities of nanomachines that may constitute of just several atoms or molecules, traditional communication mechanisms are deemed inapplicable in nanonetworks. Many novel nanoscale communication paradigms are currently under investigation such as molecular communication, communication over carbon nanotubes and nanowires. Recent work has also revealed that nanoscale physical devices naturally communicate with each other through various quantum phenomena, which makes nanoscale communication also closely related to the quantum communication networks structured based on principles of quantum entanglement. This special issue aims to capture the state-of-the-art by soliciting original (unpublished and not currently under review) and novel contributions on nanoscale communication in areas including (but not limited to) the following:

**Architectures, topologies and algorithms for nanoscale communication** – Network architectures, topologies, coverage and connectivity, synchronization, relay, broadcast, and multiple-access mechanisms, routing/addressing in nanonetworks, reliable information coding and communication, error control, energy efficiency.

**Modeling and analysis of nanocommunication** – Physical characterization/modeling of nanoscale interconnects, and programmable or configurable devices, statistical mechanics modeling of nano-communications, applications of complex network theory, network coding and information flow for nanonetworks, network calculus and queuing theoretical analysis.

**Information theoretical approaches to nanoscale communication** – Information theory and network information theory aspects of nano-networks, modeling, capacity bounds and theorems for various nanoscale communication channels, nanoscale transceiver and modulation optimization, nanoscale and molecular source and channel coding.

**Molecular communication** – Sparse-molecule communication, short/mid/long range molecular communications for nanonetworks, molecular motors, calcium signaling, communication via diffusive processes, single-nanotube radios, quantum molecular entanglement, stigmergic communication techniques.

**Nanoscale ad hoc and sensor networks** – Communication systems and protocols for nanoscale ad hoc networks, nano-sensor networks, networks of micro/nanorobotic systems, self-organizing nanobio networks, molecular sensing and sampling.

**Future nanonetworks with new nano-machines and interconnects** – Nanonetworks deployed with carbon-nanotubes (CNTs), nanowires, nanoparticles, graphene devices, nanoscale optical, wireless, and electromechanical communication technologies, quantum entanglement with nanoscale photon detectors.

**Quantum communication networks** – Hybrid classical quantum communication networks, repeaters, teleportation, entanglement swapping, nanoscale photon detectors, quantum dot networks, quantum electron transport in nanoscale semiconductor structures, nano-mechanical quantum communication systems.

**Applications for nanoscale communications** – Communication among molecular scale chemical and biosensors, nano-sensors and actuators network, in-body nanonetworks, heterogeneous bio-nano networks composed of molecular cells and nanomachines, bio-medical and in-vivo imaging and sensing, nanoscale wireless networks.

Prospective Authors: Please prepare and submit your paper following the Nano Communication Networks (Elsevier) journal manuscript format described at the online review system <http://ees.elsevier.com/nanocomnet/> by selecting “Special Issue: Nano-scale Communications” for the “Article Type” in the submission process. Papers must be in pdf format, single-column, double-spaced, and use at least 11 pt fonts, and should not exceed 25 pages including references.

**NEW Submission deadline:** June 1st, 2010  
**Final manuscript due:** September 1st, 2010

**Acceptance notification:** August 1st, 2010  
**Publication of issue:** Fourth Quarter 2010

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