

Call for Papers

3rd IEEE International Workshop on Molecular and Nanoscale Communications (IEEE MoNaCom 2013)

To be held in conjunction with
IEEE International Conference on Communications ICC2013 (IEEE ICC 2013)

Budapest, Hungary, June 2013

Recent improvements in nanotechnologies have enabled the realization of nano-scale machines, i.e., nanomachines, that promise new solutions for several applications in biomedical, industry and military fields. Many of these envisioned nanotechnology applications, e.g., intelligent drug delivery system or intra-body multi-modal health monitoring, require a set of nanomachines to collaboratively achieve a common task, which clearly mandates practical realization of *communication and networking at the nanoscale*. A number of nanomachines communicating with each other are envisioned to form a network architecture called a *nanonetwork*. Due to size and capabilities of these nanomachines as well as the challenges posed by the physical laws governing this regime, the classical communication paradigms are inapplicable in nanonetworks. Hence, a set of new *molecular and nanoscale communication* paradigms is imperative for the realization of the future collaborative and distributed nanotechnology applications. The main aims of this workshop are to increase the visibility of this growing research area to the wider communication research community as well as foster new inter-disciplinary research by bridging the field of nano and molecular technologies and information and communication technology (ICT) research. The workshop will include papers that capture the current state-of-the-art in the field of *molecular and nanoscale communications*, e.g., information, communication and network theoretical analysis of molecular and nanonetworks, mobility in molecular and nanonetworks, novel and practical communication protocols, routing schemes and architectures, design/engineering/evaluation of molecular and nanoscale communication systems, as well as their potential applications. Therefore, based on the scope of the workshop, the target audience will cover both traditional communication networking researchers (wired and wireless) as well as researchers from other fields.

In nanotechnology, nanomachines are envisioned as the most basic functional unit able to perform very simple tasks at the nanoscale. Molecular and nanonetworks are the inter-connections of nanomachines expanding the capabilities of a single nanomachine. In this context, traditional communications paradigms are not applicable, and novel ones are required to interconnect them. This workshop aims to capture the state-of-the-art by soliciting original novel contributions in this and related areas including, the following:

- ***Design and engineering of nanomachines for nano/molecular communication:*** Protein machines; Artificial cells; Synthetic cells; DNA machines; Nano-bio sensors and actuators
- ***Infrastructures for nano/molecular communication:*** Calcium signaling; Viral transport; Carbon Nano Tubes (CNT); Membrane nanotube; Flagellated Bacteria; Molecular motors over microtubules; Neural networks; Electromagnetic nanonetworks

- **Network theory:** Mobility in nano/molecular networks; Energy models for nano machines; Information processing in nano/molecular networks; Protocols and architectures for nano/molecular communication; Network controls of nano/molecular communication; Addressing, switching and routing at nano/molecular scale; Coding in nano/molecular networks; Security of nano/molecular networks
- **Nano/molecular network design:** Robust design and architecture; Network design by moleware; Emergent behaviour in nano/molecular networks (e.g. self-assembly, self-organisation); Programming for moleware communication; Planning of nano/molecular networks; Networks of nanocomputers; integrating and monitoring nanonetworks with larger-scale networks
- **Natural Computing in nano/molecular communication:** Molecular computing; DNA computing; membrane computing; Integration of computational and communication capabilities in nano/molecular networks
- **Tools to support nano/molecular network design:** Wetware communication by simulation in silico; Network simulators (e.g. ns2, ns3) for nano/molecular networks
- **Applications of nano/molecular networks:** Healthcare, e.g., Drug delivery, Nanomedicine, Telecommunications, Energy, Biotechnology, Bioremediation and Environment, Nano robots communication.

General Chair:

- Falko Dressler, University of Innsbruck, Austria

Technical Program Committee Co-Chairs:

- Michael Moore, Osaka University, Japan
- Pietro Lio', University of Cambridge, UK

Technical Program Committee Members (Tentative, in alphabetical order by last names)

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Ozgur B. Akan	Koç University	Turkey
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Dilip Krishnaswamy	Qualcomm	USA
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Michael Shur	Rensselaer Polytechnic Institute	USA
Michael Simpson	Oak Ridge National Laboratory	USA
Raghupathy Sivakumar	Georgia Institute of Technology	USA
Junichi Suzuki	University of Massachusetts, Boston	USA
Rui Teng	National Institute of Information and Communications Technology	Japan
Dinesh Verma	IBM	USA
Jiri Wiedermann	Academy of Sciences	Czech Republic
Albert Zomaya	The University of Sydney	Australia

Submission guideline

Prospective authors are encouraged to submit a standard IEEE conference style paper via the EDAS submission system (<http://edas.info/N11483>). Papers should be written in English with a standard length of five (5) printed pages (10-point font) including figures, without incurring additional page charges (maximum 1 additional page with extra charge if accepted).

Important dates

- Abstract Registration: January 4, 2013
- Submission deadline: January 11, 2013
- Notification deadline: February 22, 2013
- Camera-ready deadline: March 8, 2013
- MoNaCom 2013 dates: TBA