

IEEE Global Communications Conference

4-8 December 2022 – Rio de Janeiro, Brazil

Accelerating the Digital Transformation through Smart Communications



CALL FOR PAPERS AND PROPOSALS

Symposium on Selected Areas in Communications Molecular, Biological, and Multi-scale Communications

Symposium Co-Chairs

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Scope and Motivation

Advances in nanotechnology, synthetic biology, and lab-on-a-chip techniques have inspired both the understanding of natural communication and the design of new communication systems that operate in these domains. It is now possible to design biochemical circuits, synthetic cells, swarms of devices, and many other systems at “small” length scales (i.e., nanoscale and microscale) and to interact with systems at these scales. Achieving communication for such systems could facilitate a wave of revolutionary and interdisciplinary applications in fields from manufacturing to personalized medicine.

This track is devoted to the principles, design, analysis, implementation, and control of signalling and information systems that rely on physics beyond conventional telecommunications, particularly for “small” and multi-scale applications. These include: molecular, terahertz, and other techniques inspired by the natural sciences (physics, chemistry, and biology); novel signalling techniques to revolutionize communication at these scales; and applications of communication and information theory to the analysis of biological systems. In recognition of the interdisciplinary nature of this track, contributions from a diversity of disciplines are strongly encouraged.

Topics of Interest

Original research articles are solicited in, but not limited to, the following topics of molecular, biological, or multi-scale communications:

- Active or passive transport molecular communications (e.g., diffusion, flow, microfluidic, motor-assisted)
- Molecular MIMO
- Mobile nanonetworking
- Biological data storage and computing (e.g., DNA)

- Biochemical or biophysical signalling and computing
- Communication between and within natural and/or synthetic organisms
- Neuronal signalling or interfacing with neurons
- Synthetic or systems biology
- Unconventional electromagnetism for small or multi-scale applications (e.g., Terahertz-based wireless)

Submissions are expected (without limitation) to make contributions in at least one of the following areas:

- Channel modelling or characterization
- Computer simulation methods
- Information-theoretic analysis
- Interface and control between communication systems in different physical domains
- Laboratory experiments or testbeds
- Standards and datasets
- Security tools for communication and information systems
- Synchronization, routing, and other higher layer communication techniques
- Transmitter and receiver design or analysis, including modulation, detection, and estimation techniques

Important Dates

Paper Submission: 15 April 2022

Notification: 25 July 2022

Camera Ready and Registration: 1 September 2022

How to Submit a Paper

All papers for technical symposia should be submitted via EDAS. Full instructions on how to submit papers are provided on the IEEE Globecom 2022 website: <https://globecom2022.ieee-globecom.org/>