Selected Areas in Communications

Track on Molecular, Biological, and Multi-Scale Communications

SYMPOSIUM TRACK CHAIR:

Adam Noel, University of Warwick, United Kingdom

IMPORTANT DATES:

Paper Submission Open: 15 January 2019
Paper Submission Due: 15 April 2019
Acceptance Notification: 15 July 2019
Camera-Ready Paper Due: 16 August 2019

SUBMISSION LINK:

The general link for GLOBECOM 2019 submissions is https://edas.info/N25074. Please select the MBMSC SAC ("*Molecular, Biological, and Multi-scale Communications"*) to submit.

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 signaling 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), as well as novel signaling techniques to ***revolutionize communication*** at these scales. In recognition of the interdisciplinary nature of this track, contributions from a diversity of disciplines are *strongly encouraged*.

MAIN 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 communication (e.g., diffusion, flow, microfluidic, motor-assisted)
- Unconventional electromagnetism for small or multi-scale applications (e.g., Terahertz-based wireless)
- Biochemical or biophysical signaling and computing
- Neuronal signaling or interfacing with neurons
- Communication between and within natural and/or synthetic organisms
- Biological data storage and computing (e.g., DNA)
- Synthetic or systems biology

Submissions are expected (but not limited) to make contributions in at least one of the following areas:

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