

IEEE GLOBECOM 2023

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CALL FOR PAPERS

Intelligent Communications for Shared Prosperity

SAC Symposium: Molecular, Biological, and Multi-Scale Communication

Co-Chair

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Scope and Motivation

New communications systems are approaching the possibility of interacting with biological processes using molecules, paving the way to the interface with digital systems, and establishing an exciting area in telecommunications. Since information representation using molecules, as well as their propagation and control, are ongoing studies, novel solutions for molecular communications systems (MC) are still needed while integrating nanobio technologies, natural/synthetic biology and nanomaterial engineering. Exciting applications of this new communication technology are expected to facilitate interdisciplinary applications, and as one example, dive into biomedical engineering solutions for revolutionizing medicine with engineering of biological communications for remote or in-situ diagnosis and treatment of diseases with precision, personalization and possible regeneration capabilities. Moreover, the need for less detrimental environmental effects may allow further exploration of molecular communications in the pharma industry investigating the optimization of drug delivery, discovery and development.

The IEEE Globecom MBMC track is focused on showcasing the most recent exciting contributions in the molecular, biological and multi-scale communications. We are seeking contributions in the design, analysis, implementation and theory of molecular communications systems for biological, chemical, and sub-micro physical domains. Contributions are encouraged to be interdisciplinary in its nature, and from a diverse set of disciplines. Applications of MC are also welcomed including, but not limited to the areas of biomedical sciences, biotechnology, bioengineering, synthetic biology, and others. This track, in this year, also aims to provide support for contributions in both theoretical and experimental areas, providing a balance for the exciting future of this community.

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)
- Context information for molecular communications

- Mobile molecular communications
- Biological data storage and computing (e.g., DNA, ions)
- Biochemical or biophysical signalling and computing
- Communication between and within natural and/or synthetic organisms
- Intra-body communication systems using neurons, cardiac cells, and other body cell types
- Synthetic or systems biology
- Internet of BioNano Things and Biocyber interfaces
- Abnormality detection and localizations

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

- Channel modelling, characterization and simulations
- Laboratory experiments or testbeds: ranging from inorganic to organic compounds
- Interface and control between communication systems in different physical/chemical domains
- Synchronization, routing, and other higher layer communication techniques
- Transmitter and receiver design or analysis, including modulation, detection, estimation, and coding techniques
- Performance analysis with: Information-theory principles, dynamical system metrics, control theory principles, and similar.

Biography of the Co-Chair

Masoumeh Nasiri-Kenari was born in Babol, Iran. She is a Professor of Electrical Engineering at Sharif University of Technology (SUT) in Tehran, Iran. She received her B.S. and M.S. from Isfahan University of Technology, Iran, and her PhD from the University of Utah, United States, in 1994. In 2001, she founded the Wireless Research Laboratory in the Electrical Engineering Department to coordinate wireless communications research. Dr. Nasiri-Kenari is the recipient of several awards, including SUT's Distinguished Researcher Award and Distinguished Lecturer Award, Distinguished Scientist of Mazandaran Province, and Distinguished Professor in Engineering from the Iranian Academy of Science. She was the chair of IEEE Women in Engineering (WIE)-Iran Section from 2012 to 2016. She's currently a member of the WIE Task Group of the Iranian Academy of Science and an associate member of the Iranian Academy of Science Science Foundation.

How to Submit a Paper

All papers for technical symposia should be submitted via EDAS. Full instructions on how to submit papers and important deadlines are posted at <https://globecom2023.ieee-globecom.org/>