

**IEEE INTERNET OF THINGS JOURNAL SPECIAL ISSUE ON
Symbiotic Active/Passive Communications for the Internet of Things (IoT)**

The rapid growth of the Internet of Things (IoT) driven by recent advancements in consumer electronics, the fifth generation (5G) and beyond communications has recently attracted tremendous attention from both the industry and academia. Symbiotic active/passive communication is emerging as an innovative wireless paradigm for simultaneously supporting active primary transmission and passive IoT transmission. Specifically, the key idea is to modify and reflect the incident signals from the active primary transmitter instead of generating signals by itself (i.e., riding on the active communication for passive IoT information transfer), thus avoiding the need of power-hungry RF chains (e.g., oscillators, mixers, and digital-to-analog converters) and achieving high spectrum- and energy-efficiency. The particular feature makes it possible to realize the passive information transfer where ambient backscatter communication (AmBC) can be used at IoT device by modulating signal on the incident signals from the active transmitter, or reconfigurable intelligent surface (RIS) is applied to change the phase shifts and perform spatial modulation to insert additional IoT information.

The research of symbiotic active/passive communications for the IoT is still in its infancy and calls for more extensive and in-depth research efforts. Towards that end, this special issue aims to provide a venue to exchange recent advances in this topic. In this special issue, we look for original and high-quality research works in the novel area of symbiotic active/passive communications for the IoT. Theoretical, experimental studies, and also case studies are highly encouraged. Relevant topics include, but are not limited to:

- Signal processing for symbiotic communication with AmBC/RIS in IoT
- Hardware and testbed for symbiotic communication with AmBC/RIS
- Performance analysis for symbiotic communication with AmBC/RIS
- Modulation and demodulation for symbiotic communication with AmBC/RIS
- Secrecy and covert communication designs for AmBC/RIS
- Standards and network protocols for symbiotic communication with AmBC/RIS
- Multiple access schemes for symbiotic communication with AmBC/RIS
- Radio resource management for symbiotic communication with AmBC/RIS
- AI-empowered designs for symbiotic communication with AmBC/RIS
- Enabling technologies such as wireless powered communication, integrated sensing and communication, and unmanned aerial vehicle (UAV) for AmBC/RIS in IoT

Important Dates:

- Submission Deadline: October 15, 2022
- First Round Review Due: November 30, 2022
- Revision Due: December 31, 2022
- Sec. Reviews Due/Notification: February 15, 2023
- Final Manuscript Due: March 15, 2023
- Publication Date: 2023

Submission Guidelines:

All original manuscripts or revisions to the IEEE IoT Journal must be submitted electronically through IEEE Manuscript Central, <http://mc.manuscriptcentral.com/iot>. When the authors reach the “Article Type” step in the submission process, they should select SI: Symbiotic Active/Passive Communications for the Internet of Things. Solicited original submissions must not be currently under consideration for publication in other venues. Author guidelines and submission information can be found at <http://iee-iotj.org/guidelines-for-authors/>.

Guest Editors:

- Lu Lv (lulv@xidian.edu.cn), Xidian University, China.
- Yinghui Ye (connectyeh@126.com), Xi’an University of Posts & Telecommunications, China.
- Rose Qingyang Hu (rose.hu@usu.edu), Utah State University, USA.
- Zhiguo Ding (zhiguo.ding@manchester.ac.uk), The University of Manchester, UK.
- Sumei Sun (sunsm@i2r.a-star.edu.sg), Institute of Infocomm Research, Singapore.